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**FINAL
PILOT TREATABILITY STUDY REPORT**

**HOWE VALLEY LANDFILL
HARDIN COUNTY, KENTUCKY**

Prepared by:

**HATCHER-SAYRE, INC.
Lexington, Kentucky
December 31, 1992**

Job No. 0064-001

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PROJECT DESCRIPTION

The Howe Valley Landfill Site is located in Hardin County, south of Vertrees, Kentucky. It lies 1.4 miles south of State Road 86 at the end of Tom Duvall Lane. The Site is positioned at the boundary of the Constantine and Howe Valley USGS quadrangle maps at coordinates of 37°40'05" N latitude and 86°07'30" W longitude. It consists of approximately 11 acres of sparsely vegetated land situated in a topographic basin. Approximately 2.5 acres of this site had been cleared for the landfilling of wastes.

Kentucky Industrial Services, Inc. conducted industrial waste disposal operations at the Site, possibly as early as 1967. The Site was operated as an industrial waste landfill until 1976 and was under permit by the state of Kentucky from 1970 to 1976. The Site has essentially been inactive since 1976, with access limited but not restricted. Types of wastes reportedly disposed at the Site consisted of manufacturing sludges, plating sludges, galvanizing wastes, silicone polymers, insulation and insulation by-products.

The Site was included on the Superfund National Priorities List (NPL) in accordance with Section 105(a)(8)(B) of CERCLA, 42 U.S.C. S9605(a)(8)(B). This site was proposed as a Superfund Site on June 10, 1986, 51 Federal Register 21106 (1986), and was finalized on the NPL on July 22, 1987, 52 Register 27623 (1987).

During the first part of 1988, two Potentially Responsible Parties, Dow Corning Corporation and Eagle-Picher Industries, Inc., agreed to conduct a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS included studies to characterize the type, magnitude and extent of contamination, as well as to characterize, excavate and dispose off-site the buried waste at the Site. The RI/FS was completed in July 1990 and the Record of Decision was issued in September 1990. Dow Corning Corporation signed a Consent Agreement with EPA in February 1991 to perform the Remedial Design/Remedial Action (RD/RA).

Based upon the results of the waste characterization and removal activities conducted at the Howe Valley Site, the following information was obtained:

- A limited number of industries disposed of waste at the Site.
- Four general waste types were encountered (silicone polymers, plating sludges, insulation manufacturing chemicals and rubbish).
- Noncontainerized surface wastes consisted primarily of insulation and rubbish.
- Ninety-nine percent (99%) of the drummed wastes consisted of silicone polymers (90%) and metal sludges (9%).

- Essentially one hundred percent (100%) of the noncontainerized, buried industrial wastes consisted of silicone polymers (caulking compounds).

Although the entire study area was approximately 11 acres, the actual area where historical disposal activities occurred was limited to just over 2 acres. This disposal area was subdivided into two removal/treatment areas: 1) the central area which is just less than 1 acre, and 2) the outlying areas which total a little more than 1 acre (Figure 1). These areas were separated primarily on the basis that the metal sludge waste drums were almost entirely buried in the outlying areas and, while the silicone wastes were found throughout the disposal area, the noncontainerized silicone waste was buried only in the central area of the Site. This Pilot Treatability Study (TS) only includes the central, organically-contaminated area of the Site.

The field samples from the central area were analyzed for the four chemicals of concern: 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethene (1,2-DCE), 1,1,1-trichloroethane (1,1,1-TCA) and tetrachloroethene (PCE). It should be noted that a location designation such as 9.5C.5 3' means a point that lies halfway between north-south increments 9 and 10 (9.5) and halfway between east-west increments C and D (C.5), depth of sample, 3 feet (Figure 2). The alpha-numeric system was adapted to designate the sample location to avoid possible transcription errors due to reversals.

No cleanup goal/soil action level (SAL) has been established for 1,1-DCA. The only location where it was noted above the detection limit was at 11H at 3 feet, where it was detected at 13 mg/kg. In addition, four locations were analyzed for TCL. The organics found to be above acceptable levels are discussed below. It should be noted that during the sampling program, two of the subsurface locations (8E and 9.5C.5) were saturated.

1,2-DCE

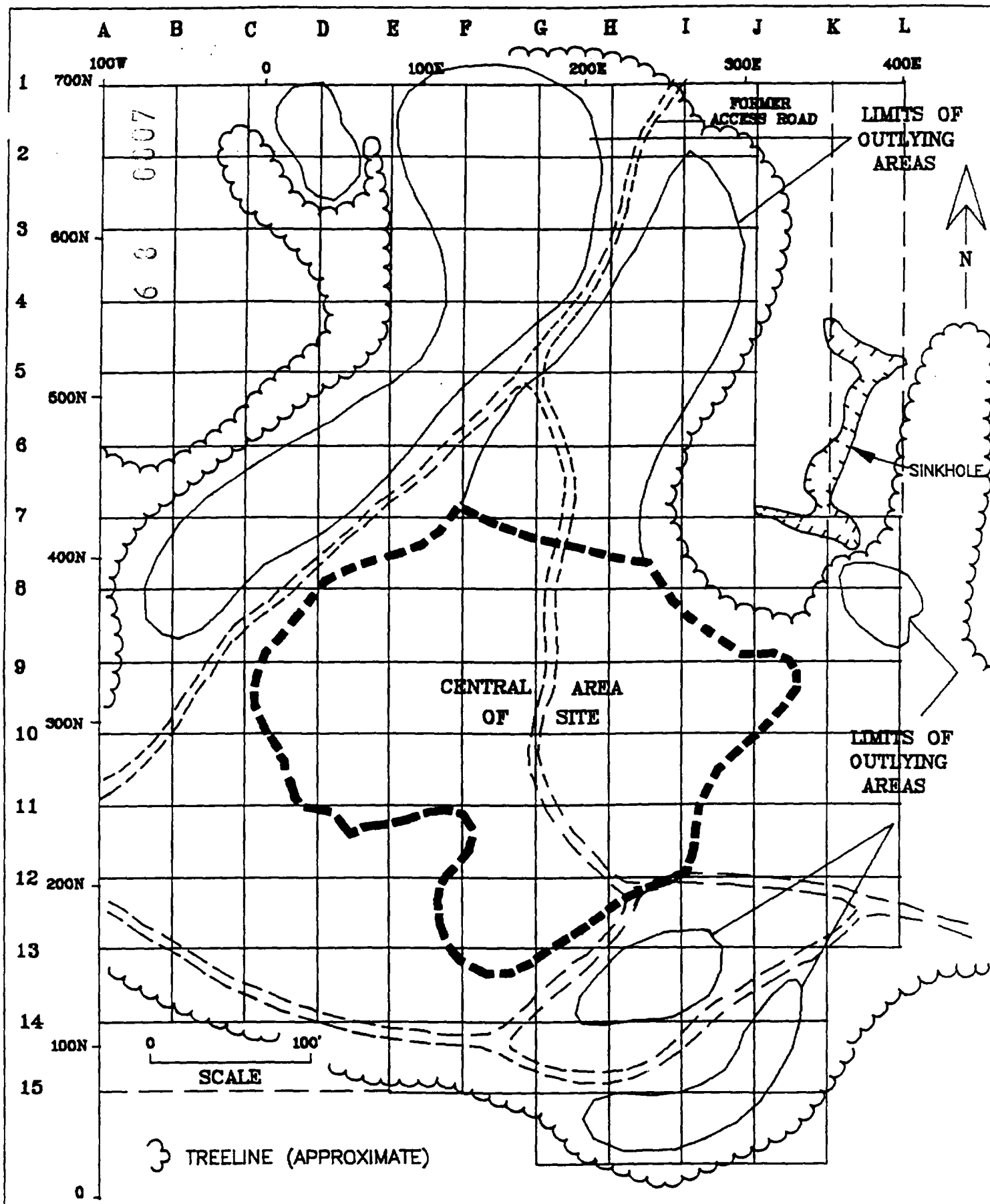
No 1,2-DCE was detected above the SAL on the surface or at a depth greater than 6 feet. The distribution of 1,2-DCE above the SAL occurred at Location 11E where the 3-foot samples showed 1,2-DCE at 15 mg/kg and 20 mg/kg (duplicate location).

1,1,1-TCA

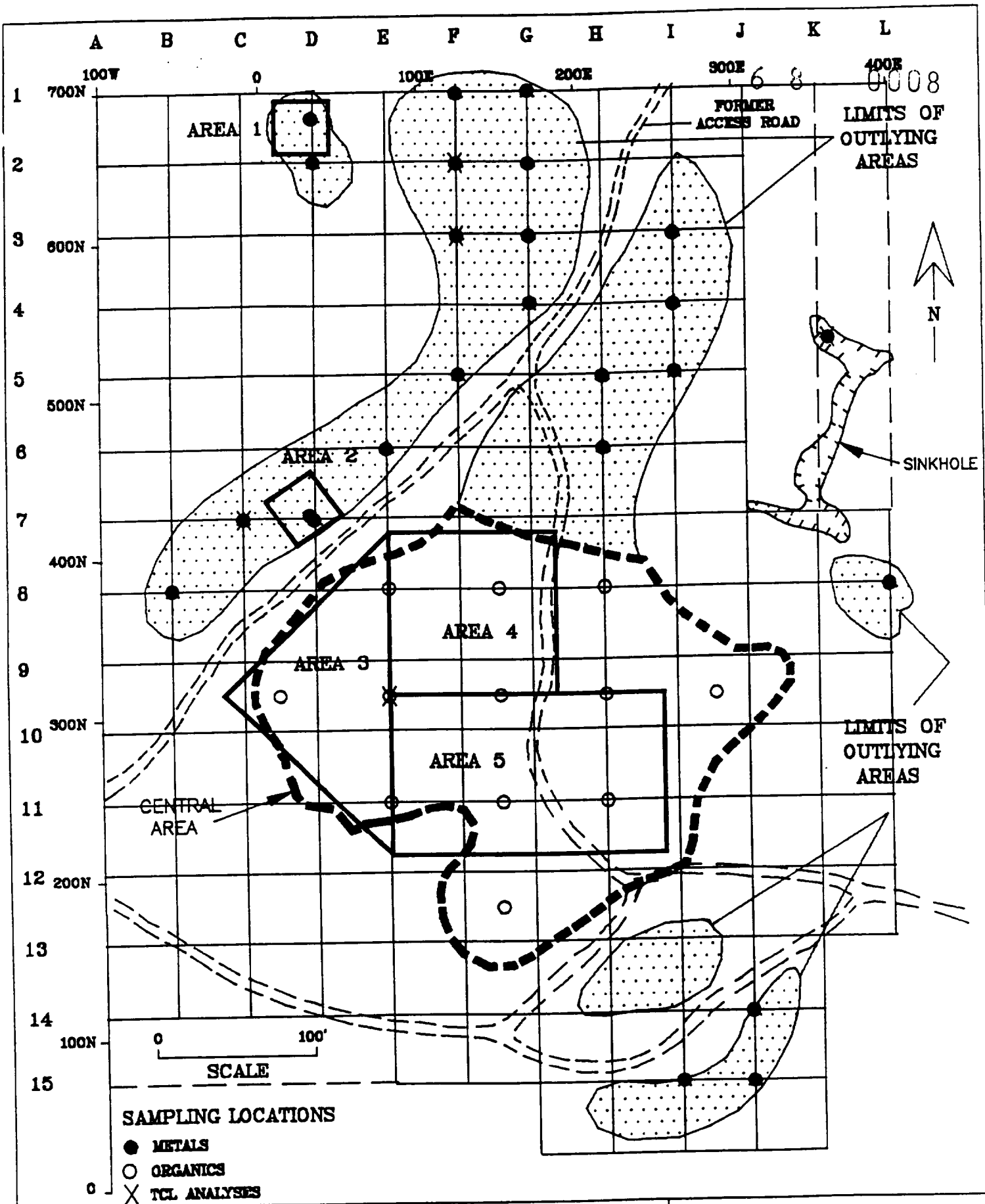
No 1,1,1-TCA above the SAL was found in any surface sampling location. Two locations, both at 3 feet, had levels above the SAL; 9.5F.5 at 170 mg/kg and 11H at 340 mg/kg. Only one location at greater than 6 feet was over the SAL, 9.5C.5 at 200 mg/kg.

PCE

The only surface sample over the SAL for PCE was 80 mg/kg taken at 8E. Samples taken at 3 feet showed the broadest spatial



DATE: 7/3/91	FIGURE 1 CENTRAL AND OUTLYING AREAS OF THE SITE	HATCHER-SAYRE, INC. LEXINGTON, KY
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APPROVED BY: JDK		CLIENT NO.: 0064-001



DATE: 9/9/91	FIGURE 2 AREAS INDICATING CONTAMINATION ABOVE THE SOIL ACTION LIMITS (SALs)	HATCHER-SAYRE, INC. LEXINGTON, KY
DRAWN BY: PDH		CLIENT NO.: 0064-001
APPROVED BY: TY		

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distribution of contamination. Samples taken from 8E, 8F.5, 9.5E, 9.5F.5, 11E and 11H exceeded the SAL. Samples taken at depths greater than 3 feet that exceeded the SAL were 8E, 9.5C.5, 9.5D.5 and 11E. No samples deeper than 3 feet were taken at 8F.5, 8H, 9.5E and 11E due to a high bedrock elevation.

The selected remedy for the Site addresses the contamination remaining in the on-site soils and contamination that could be released into the groundwater. The principal threat to human health and the environment is from the possible ingestion of or dermal contact with the contaminated soils. A secondary threat would be from ingestion of contaminated groundwater. Currently, groundwater samples taken at Boutwell Spring indicate that contamination is below the MCLs or health-based levels.

The selected organic contamination remedy was anticipated to involve the following specific activities:

- Implementation of a Bench-Scale and Pilot-Scale TS to ensure that the aeration process will reduce organic concentrations to acceptable levels in the laboratory and under actual field operations,
- Installation of water diversion ditches to prevent water from running onto the aerating soils,
- Excavation and treatment, via on-site aeration, of approximately 7,400 cubic yards of central area soils that contain elevated concentrations of organics (Figure 2, Areas 3, 4 and 5),
- On-site air monitoring to ensure adequate protection of workers and nearby residents, and
- Revegetation of the Site to restore its natural conditions.

The Bench-Scale TS was conducted by the Dragun Corporation, Farmington Hills, Michigan. Based upon the Bench-Scale TS results, Dragun Corporation concluded:

- First, most of the PCE volatilized from Howe Valley soils a few hours after the study began. Under static air conditions, a volatilization rate of 41 mg PCE/m³/minute was determined.
- Second, smaller concentrations of PCE volatilize from the soil at a relatively lower rate.
- Third, PCE volatilization from low moisture content soil is somewhat faster than from high moisture content soil. The high moisture soil formed lumps which did not mix well, leading to unequal distribution of the PCE and to less soil exposure to the atmosphere.

- Fourth, the results of this study show that the proposed remediation plan, which involves soil rototilling, should release VOCs from Howe Valley soils; residual VOC concentrations in these soils should be well below the SALs.

REMEDIAL TECHNOLOGY DESCRIPTION

The remedial technology consisted of exposing the contaminated soil to the air so that volatilization could occur (physical phase change). PCE is quite volatile and, as a result, is rapidly transported to the troposphere. Once in the troposphere, hydroxyl radicals attack the double bond, resulting in the subsequent formation of trichloroacetylchloride as the principal initial product (Andersson *et al.* 1975; Hanst 1978; Environmental Protection Agency 1975; Gay *et al.* 1976). This compound is readily hydrolyzed at ambient conditions (Morrison and Boyd 1973). PCE, however, is attacked by hydroxyl radicals more slowly than most other olefin pollutants due to the presence of four chlorine atoms (Environmental Protection Agency 1975). According to Yung *et al.* (1975), the tropospheric lifetime of PCE, based on its rate of reaction with hydroxyl radicals, is reported to be 8.5×10^5 seconds, corresponding to a lifetime of about 10 days. [EPA 1979]

The most important aspect of the aeration technology is maximizing the surface exposure of the contaminated soil. The rototiller is utilized to break down the dirt "clumps" and increase surface exposure. Volatilization occurs faster during hot, dry weather conditions. Due to the high clay content in the soil, high moisture content tends to adhere the clay particles together and inhibit breakdown of the dirt clumps. Moisture in the soil, therefore, reduces surface exposure and increases the required aeration time.

TEST OBJECTIVES

The Bench-Scale TS tests conducted by Dragun Corporation provided validation for the aeration technology. The objective of the Pilot-Scale field test was to confirm the effectiveness of the final remedial design under actual field conditions. It also enabled identification of any problems with design operations or testing procedures.

SAMPLING AND ANALYSIS

Sampling and analysis was conducted in accordance with the Pilot Study Sampling & Analysis Plan (SAP). It essentially consisted of monitoring the progress of the treatment (field screening) and verifying that the soils were sufficiently treated (confirmation sampling).

Field screening for VOCs was conducted with either a PID (Hnu) or FID (OVA) meter. During the initial stages of aerating the

soil, field staff would walk over the aeration area with the meter and check the VOC readings at the soil surface. When it appeared that the readings were approaching the 10 ppm average, samples would be collected for headspace analyses. These samples were collected on about 25 to 40-foot centers. A clean, pint-sized glass jar was filled 1/2 to 2/3 full of the soil sample and a piece of aluminum foil was placed over the mouth of the jar. The jar ring was tightened over the foil and the sample was brought back to the Site trailer. The samples were allowed to adjust to room temperature (approximately 15 minutes to 1.2 hour) prior to taking the meter readings. After adjustment, the meter probe was inserted through the aluminum foil and the readings recorded.

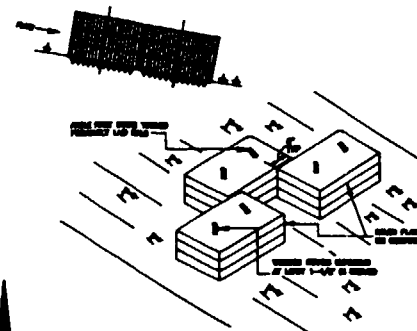
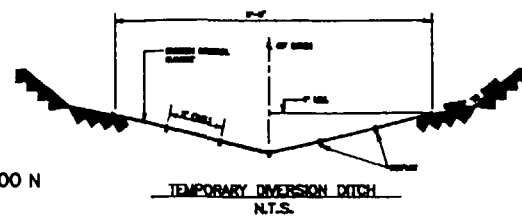
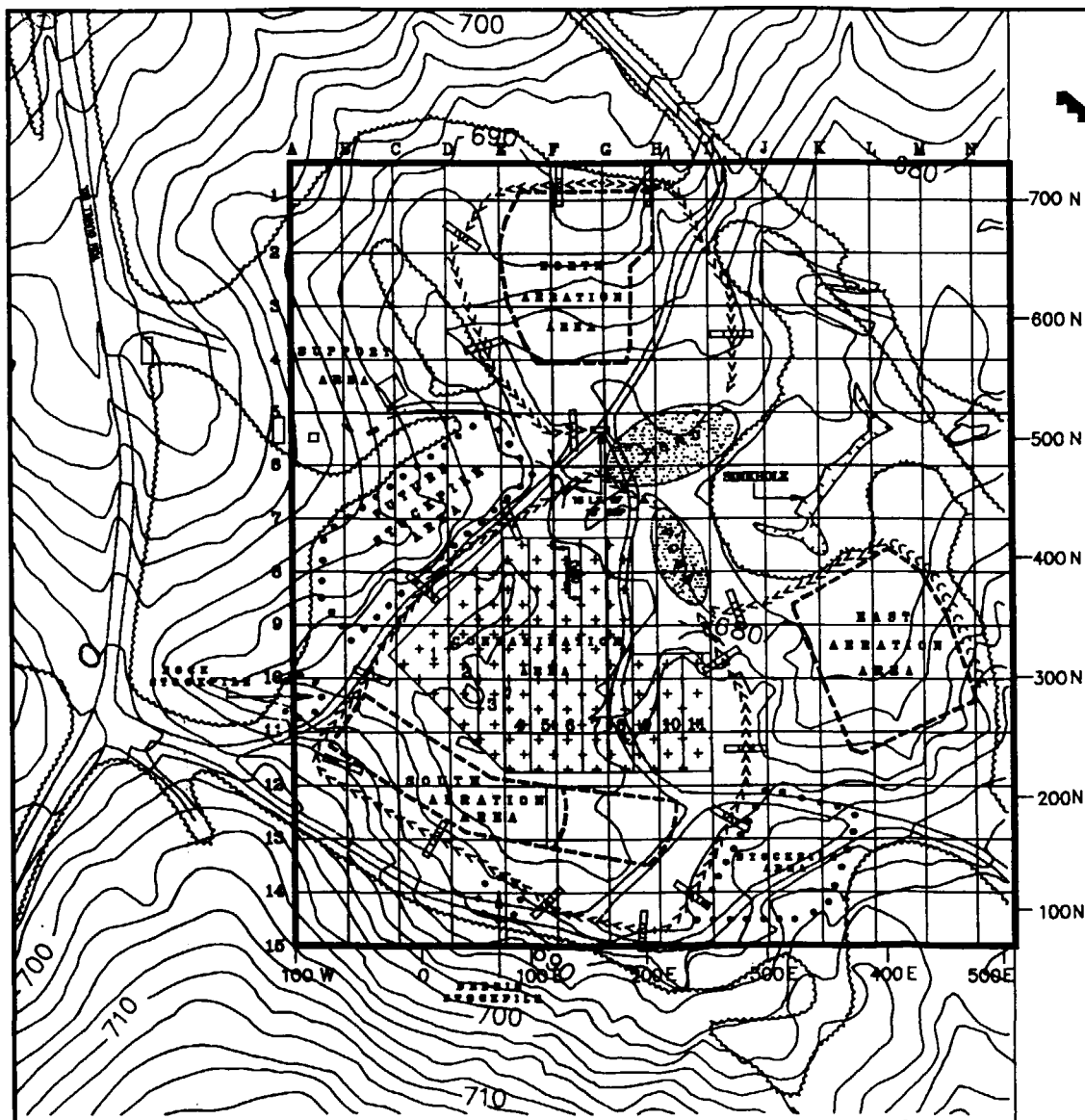
When the headspace VOC readings averaged less than 10 ppm, confirmation sampling was undertaken. These samples were collected with decontaminated stainless steel spoons or scoops at 50-foot centers. The samples were placed in precleaned, laboratory-supplied sample jars so that there was no headspace, labeled, placed in a sealable plastic bag in an ice cooler and sent to the laboratory by overnight mail under chain-of-custody. The aerated soil was stockpiled adjacent to the aeration area until the confirmation results were received. Once the results were obtained and the analyses confirmed that the concentrations were below the SALs, this stockpile was moved to the designated treated soil stockpile.

EXPERIMENTAL PROCEDURES AND RESULTS

The Pilot TS was initiated to follow the design and procedures anticipated to be utilized as part of the actual remedial action. The program consisted of two separate phases. Phase I consisted of site preparation and included leveling and preparing the aeration and stockpile areas as well as constructing the drainage areas and collection ponds. Phase II was the actual pilot aeration treatment process. A final phase, which will be implemented following completion of the treatment operations, will consist of leveling, recontouring and revegetating the Site.

The results of the Phase I site preparation activities are shown on Figure 3. The following changes were incorporated into the original design plan. First, the run-on drainage ditches were generally located as designed but some changes were dictated by the topography. In the southeastern area of the Site, construction of the drainage ditch uncovered two intact drums (the investigation and handling of which is addressed separately) resulting in a slight shift in the ditch's location. Due to the discovery of drums and the other debris uncovered during the construction of the ditches, all run-on waters were directed to the ponds rather than to the sinkhole.

Another revision to the Site Remediation Plan consisted of adding a third aeration area. This easternmost aeration area was added when, following several weeks of aerating the soil, it was shown that the high soil moisture content was substantially increasing the treatment time. Since it was taking several days



LEGEND

- TEMPORARY DIVERSION DITCH
 - COLLECTION POND
 - SILT CHECK
 - 3 TREE LINE
 - 4 SEQUENCE OF TRENCH EXCAVATION
 - + ORGANIC CONTAMINATED SOIL
 - SITE AREA
 - STOCKPILE AREA
 - ~ DIVERSION BERM
- CONTOUR INTERVAL = 2 FEET
GRID CELLS ARE 45' X 45'

TOPOGRAPHIC SOURCE: TURNER ENGINEERING



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FIGURE 3

HOVE VALLEY LANDFILL
HARDEN COUNTY, KY
ORGANIC CONTAMINANT
REMEDIATION SITE PLAN

Designed By	Date
Drawn By	Scale
Approved By	Drawing File
Job No.	
Revisions	
Sheet	Of
1	1

just to dry the soil sufficiently to adequately break it up prior to treatment, the third aeration area was requested by Dow Corning and approved by EPA.

Phase II, the pilot treatment of contaminated soil on-site, was initiated in stages with soil from the central area of the Site (Figure 3). This area was defined on the basis of concentrations exceeding the proposed SALs for the three contaminants of interest. Generally, the treatment procedure involved excavating the soil, transporting and depositing it in the designated aeration areas and aerating the soil with a rototiller. When the VOC concentrations in the soil were below the SALs, the soil was stockpiled. The detailed treatment method consisted of the following steps:

1. **Excavation Areas:** The soil requiring treatment is shown on Figure 3 as Areas 1 through 11. The Pilot Study excavation began in Area 1. It continued to bedrock, initially some 4-6 feet below the surface, until sufficient soil was placed on the South Aeration Stockpile (SASP) area. Excavation was then initiated for the second or North Aeration Stockpile (NASP) area. This process was repeated when the treated soil was removed from the aeration areas. Excavation essentially progressed from Area 1 to Area 2 and then to Area 3.

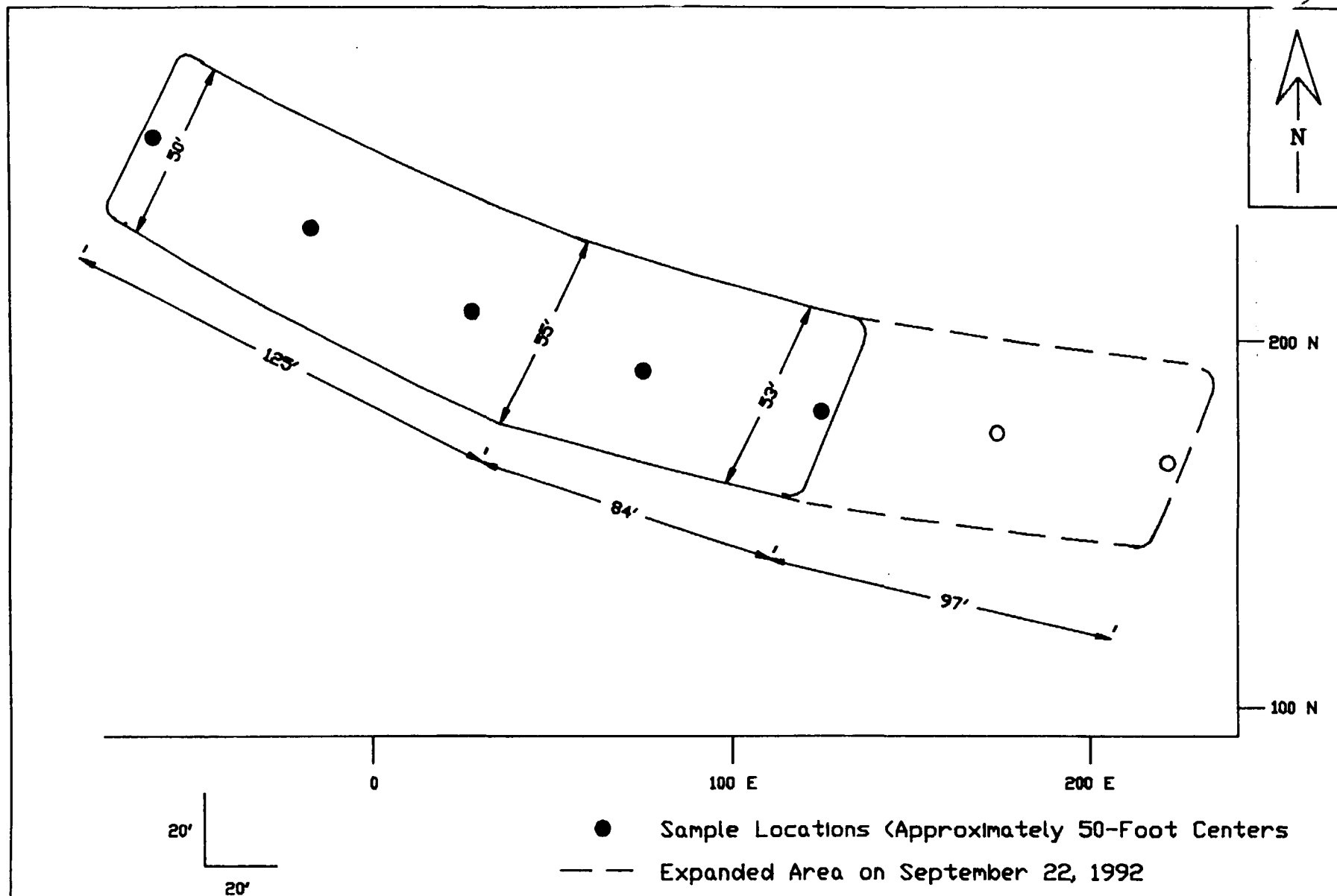
The limestone bedrock in the central area has differentially weathered, producing typical karst features, i.e., deep pockets surrounded by prominences. In the pockets below 8 feet, an organic liquid was encountered (discussed in a separate report). For the Pilot Study, therefore, the excavation depth was limited to about 8 feet. During the first month of the Pilot Study, Areas 1, 2 and 3 were excavated for treatment. The excavated areas were covered with plastic sheets if rain was forecasted.

2. **Soil Excavation:** Soil was excavated for treatment utilizing a trackhoe. The trackhoe removed the soil from the trench and loaded it into a tandem dump truck, which hauled and deposited it on the designated treatment (aeration) area (Figure 3). The loader then spread the soil in approximately 6-inch lifts. Technicians sifted through the soil to remove large rocks and debris, e.g., drum lids, silicone tubes or pieces, small containers, etc. A front-end loader was used to move these materials to their respective stockpiles. Substantial stormwater, which collected on the plastic liners in the excavated areas, was pumped to the on-site holding ponds. As approved by EPA, water containing the organic liquid was initially pumped to a 2,500-gallon HDPE temporary holding tank until it was filled to capacity. Subsequent stormwater, which collected in the excavation, prompted a request to EPA for approval to treat the water on-site with a portable activated carbon treatment unit.
3. **Soil Treatment - Aeration:** The soil in the treatment or aeration area was aerated continuously using a farm tractor with a rototiller attachment. This procedure breaks up the

clods of contaminated soil, exposes the soil particles to the air which helps dry it out and enhances natural surface evaporation. Initially, the tractor tires were compacting the soil and reducing aeration. To correct this situation, a dozer was used to "windrow" the soil and prevent compaction by the tires.

During the aeration period, VOC screening, using a PID or FID meter, was performed until total organic vapor concentrations consistently averaged below 10 ppm. Several VOC screening techniques were tested during the Pilot Study. During the first week, the PID meter readings were taken at the aeration surface to assess when the aerated soil was approaching the 10 ppm level. Headspace analyses were conducted on the Pilot Study area after the surface testing indicated that VOCs were at approximately 10 ppm. During the end of the second week and the first couple of days of the third week, a hot plate was utilized to warm the soil in the jars for approximately 5 minutes to see if the heat would help drive off the VOCs and increase the meter readings. It had been shown during the 1988 aeration study that PCE, due to its high distribution coefficient (K_d) value, would adhere to the soil so tightly that the headspace analyses would indicate the soil was sufficiently treated (total VOCs were below 10 ppm). Some of the confirmation analyses, however, would indicate that PCE was still above its SAL. To try to drive off the PCE and get a better picture of what concentrations still remained in the soil, it was decided to attempt heating the soil on a hot plate. Heating, however, increased the moisture in the air (humidity) which affected the meters and, therefore, headspace analyses without heating were reinstated. Headspace analyses were performed on all soil aeration areas prior to the taking of any confirmation samples. Although readings were generally not taken until some aeration had occurred, most of the headspace readings which were recorded were below 100 ppm (Attachment 1).

When the readings averaged below 10 ppm, confirmation samples were taken for off-site laboratory analysis for the target compound VOCs. Confirmation samples were collected on approximately 50-foot centers (Figures 4 and 5). A summary of the aeration activities is presented on Table 1. A summary of the preaeration and confirmation sample analyses is presented on Table 2. It should be noted that only three of the confirmation samples were collected from the SASP III on October 23. Half of this area needed to be excavated due to a spongy area which had developed where the equipment was progressively sinking deeper into the ground. The spongy area was the result of wet clayey soil that had to be removed and replaced with dryer soil. The laboratory analyses are appended as Attachment 2. Following laboratory confirmation, the treated soils were redeposited in the Southern Stockpile Storage Area (Figure 3).



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APPROVED BY: PW

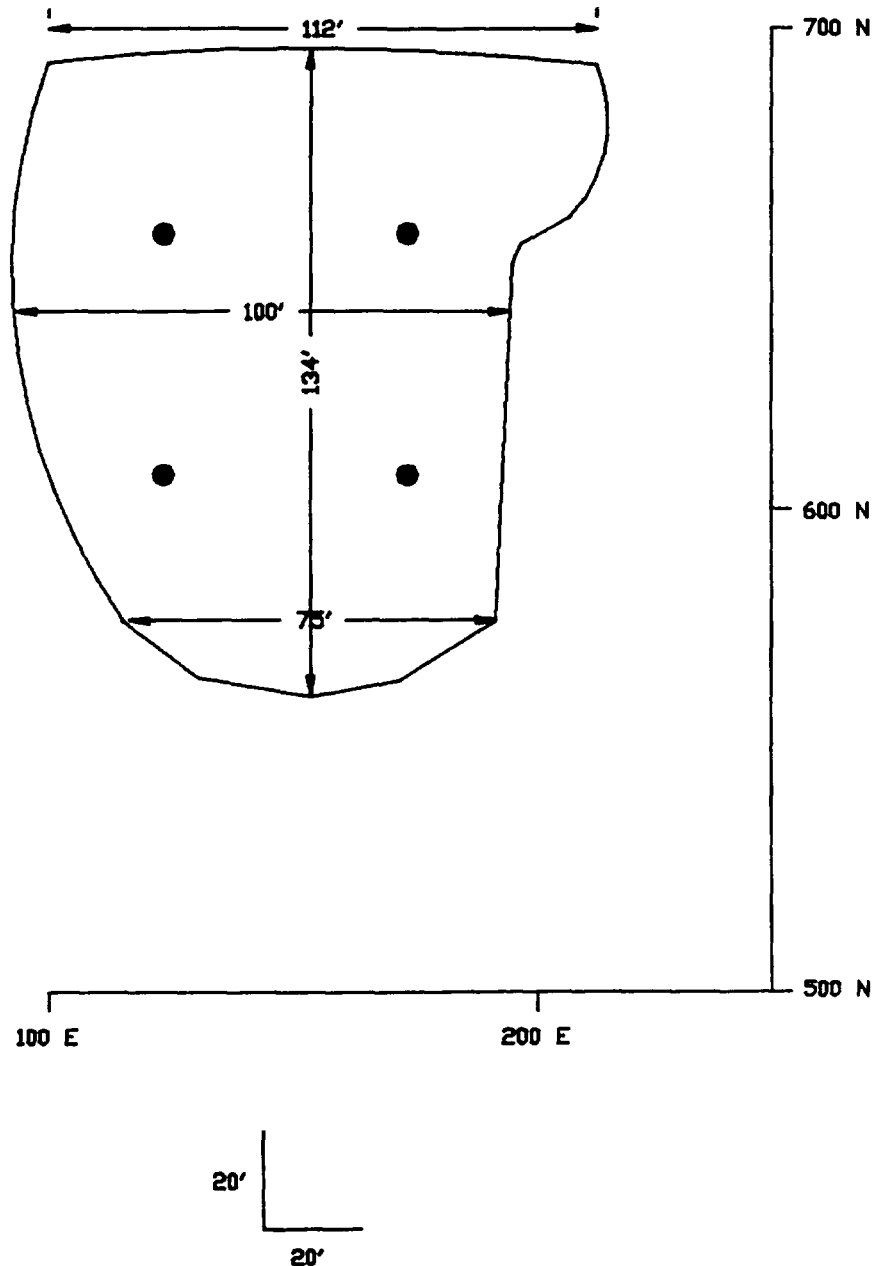
FIGURE 4

SOUTH AERATION STOCKPILE
 (Original and Expanded Area)

HATCHER-SAYRE, INC.
LEXINGTON, KY

CLIENT NO.: 0064-001

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● Sample Locations (50-Foot Centers)

DATE: 12/31/92	<p>FIGURE 5</p> <p>NORTH AERATION STOCKPILE</p>	HATCHER-SAYRE, INC.
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APPROVED BY: PW		CLIENT NO.: 0064-001

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TABLE 1
SUMMARY OF AERATION ACTIVITIES

SOUTH AERATION STOCKPILE (SASP) I (Batch
No. 1 for this location - \approx 260 cy)

September 15, 1992 - Initiated aeration on SASP
September 17, 1992 - Collected 5 confirmation samples; all no detect

NORTH AERATION STOCKPILE (NASP) I (Batch
No. 1 for this location - \approx 350 cy)

September 21, 1992 - Initiated aeration on NASP
September 28, 1992 - Collected 4 confirmation samples; PCE ranged from 0.006 to 0.027 ppm

SASP II (Batch No. 2 for this location - \approx
340 cy)

September 29, 1992 - Initiated rototilling on enlarged SASP; PCE ranged from 8.5 to 19 ppm; 1,1,1-TCA ranged from ND to 0.85 ppm
October 2, 1992 - Collected 7 confirmation samples (enlarged area); PCE ranged from ND to 0.64 ppm

NASP II (Batch No. 2 for this location - \approx
350 cy)

October 3, 1992 - Initiated rototilling on NASP; PCE ranged from 1.7 to 250 ppm; 1,1,1-TCA ranged from ND to 36 ppm
October 7, 1992 - Collected 4 confirmation samples; all no detect

SASP III (Batch No. 3 for this location - \approx
170 cy)

October 7, 1992 - Initiated rototilling on SASP; PCE ranged from 11 to 71 ppm
October 23, 1992 - Collected only 3 confirmation samples due to excavation; PCE ranged from 0.016 to 0.044 ppm

TABLE 1 (continued)

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NASP III (Batch No. 3 for this location -
≈ 350 cy)

October 7, 1992	-	Hauled excavated soil to NASP; PCE ranged from 14 to 74 ppm; 1,1,1-TCA ranged from 0.52J to 60 ppm; 1,2-DCE ranged from ND to 0.44J ppm
October 26, 1992	-	Collected 4 confirmation samples; PCE ranged from 0.019 to 0.046J ppm

TABLE 2
SUMMARY OF ANALYTICAL RESULTS (mg/kg)

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SOUTH AERATION STOCKPILE (SASP) I

<u>Confirmation Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
Pilot Study A (Sample 1)	ND	ND	ND	ND
Pilot Study B (Sample 2)	ND	ND	ND	ND
Pilot Study C (Sample 3)	ND	ND	ND	ND
Pilot Study D (Sample 4)	ND	ND	ND	ND
Pilot Study E (Sample 5)	ND	ND	ND	ND

NORTH AERATION STOCKPILE (NASP) I

<u>Confirmation Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
NASP 1 (Sample 1)	ND	0.006	ND	ND
NASP 2 (Sample 2)	ND	0.017	ND	ND
NASP 3 (Sample 3)	ND	0.027	ND	ND
NASP 4 (Sample 4)	ND	0.008	ND	ND

SOUTH AERATION STOCKPILE (SASP) II

<u>Preaeration Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
SASP 1 (Sample 1)	0.850	19	ND	ND
SASP 2 (Sample 2)	ND	8.5	ND	ND
<u>Confirmation Samples</u>				
SASP 1 (Sample 1)	ND	0.640	ND	ND
SASP 2 (Sample 2)	ND	ND	ND	ND
SASP 3 (Sample 3)	ND	0.330J	ND	ND
SASP 4 (Sample 4)	ND	ND	ND	ND
SASP 5 (Sample 5)	ND	0.330J	ND	ND
SASP 6 (Sample 6)	ND	ND	ND	ND
SASP 7 (Sample 7)	ND	0.600J	ND	ND

NORTH AERATION STOCKPILE (NASP) II

<u>Preaeration Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
NASP N (Sample 1)	36	250	ND	ND
NASP S (Sample 2)	ND	1.7	ND	ND
<u>Confirmation Samples</u>				
NASP 2 NW (Sample 1)	ND	ND	ND	ND
NASP 2 SW (Sample 2)	ND	ND	ND	ND
NASP 2 NE (Sample 3)	ND	ND	ND	ND
NASP 2 SE (Sample 4)	ND	ND	ND	ND

TABLE 2 (continued)

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SOUTH AERATION STOCKPILE (SASP) III

<u>Preaeration Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
SASP 3 (Sample 1)	ND	71	ND	ND
SASP 3 (E) (Sample 2)	ND	11	ND	ND
<u>Confirmation Samples*</u>				
SASP 3A (Sample 1)	ND	0.044	ND	ND
SASP 3B (Sample 2)	ND	0.018	ND	ND
SASP 3C (Sample 3)	ND	0.016	ND	ND

* Only half of the area sampled - other half dug up to firm up
spongy area

NORTH AERATION STOCKPILE (NASP) III

<u>Preaeration Samples</u>	<u>1,1,1-TCA</u>	<u>PCE</u>	<u>1,1-DCA</u>	<u>1,2-DCE</u>
NASP 3 (N) (Sample 1)	0.520J	14	ND	0.440J
NASP 3 (S) (Sample 2)	60	74	ND	ND
<u>Confirmation Samples</u>				
NASP 3A (NE) (Sample 1)	ND	0.032	ND	ND
NASP 3A (NW) (Sample 2)	ND	0.019	ND	ND
NASP 3A (SE) (Sample 3)	ND	0.038J	ND	ND
NASP 3A (SW) (Sample 4)	ND	0.046J	ND	ND

ND = not detected

J = below detection limit - estimated level

The Quality Assurance/Quality Control data quality objectives (DQOs) for the actual verification of treatment were at Level IV. The field screening methods were Level I. The PID and FID meters were calibrated utilizing instructions provided by the manufacturers. Trip blanks, equipment blanks, intralab spikes and duplicates were collected and are reported with the laboratory data (Attachment 2). All of the trip and equipment blanks were nondetect while the spikes and duplicate samples were within acceptable ranges.

Unfortunately, the state of Kentucky was subjected to one of the highest recorded rainfall years in history. Rain and temperature were recorded at the Site during the Pilot Study. Approximately 3.3 inches were recorded in September; nearly 2 inches in October; and more than 3.5 inches in the first two weeks in November (Attachment 3). Due to the high moisture content and the resulting much slower treatment time, two modifications to the handling procedures were implemented. The first consisted of creating a stockpile next to the excavated area to attempt to predrain the soil prior to rototilling. Second, a third aeration area was established to increase the treatment area and a second rototiller was brought to the Site to expedite soil turnover. These two changes should significantly improve the speed of treatment operations.

HEALTH AND SAFETY

The Health & Safety Plan for the Pilot TS indicated that the associated risk at the Site is quite low. The projected primary risk source was exposure to select organic contaminants from volatilization from the contaminated soil. Due to the anticipated low associated risk, Level C Protection was stipulated to be utilized initially and upgraded, if necessary and as appropriate. Due to the discovery of the organic liquid in Area 1 below 8 feet, workers in this area had to be upgraded to Level B. The other work areas remained at Level C.

SUMMARY AND CONCLUSIONS

A Pilot-Scale TS was conducted at the Howe Valley Landfill Site in Hardin County, Kentucky from mid-September to late October 1992. The study, undertaken subsequent to a successful Bench-Scale TS by Dragun Corporation, was undertaken to confirm its viability under actual field conditions. Secondarily, it was to be used to evaluate the final design plan for remediating the organically-contaminated soil at the Site.

During the nearly 6-week long study, approximately 2,000 cubic yards of soil were successfully treated. As had been indicated in earlier studies, the PCE represented the most difficult contaminant of concern to treat at the Site. The concentration of this

compound, however, was consistently treated below 1 ppm compared to the SAL of >7.5 ppm. All of the other chemicals of concern were consistently below detection.

As the Bench-Scale TS indicated, moisture considerably slowed down the on-site treatment. The moisture tends to "clump" the clayey soils together, thereby reducing the soils' exposure to the air. Unfortunately, the Site experienced one of the highest rainfall years in recorded history. This, along with weekly rainfall during the Pilot Study, substantially increased the need for additional aeration time.

To improve the overall treatment efficiency, stockpiles are being created adjacent to the excavation areas. This is allowing the stockpiled soil to begin drying out prior to being moved to the aeration areas. Additionally, a third aeration area was approved by EPA which will allow more treatment per unit time. In conjunction with this new aeration area, a second tractor and rototiller will be utilized to accelerate treatment.

Overall, the Pilot TS was very successful. Other than the above described changes to improve the efficiency of the operation, the overall Organic Design Remediation Plan should be adequate as proposed.

6 8 0023

REFERENCES

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ATTACHMENT 1
PID/FID METER READINGS

6 3

0026

HATCHER-SAYRE, INC.

PID/PID Readings Form

Sheet 1 of 1Project Name: Howe-Valley Job Number: 0064-001Date: 9/16/92Sample Location: SASP #1

Distribution List:

OVASampler: K. P. Weaver Sampler's Initials: KDReviewer: P. Weaver Reviewer's Initials: PW9-10-92 cal. OVA & HNV9-16-92 cal. HNV 4.55 span

Sample #	Time		Meter Reading (Parts Per Million)	Comments
	Sample Taken	Reading Taken		
North 1		10:00 am	10	All readings are taken straight off areen surface.
" 2		"	12	
" 3		"	18	
" 4		"	13	
" 5		"	8	
" 6		"	6	
" 7		"	10	
" 8		"	12	
" 9		"	5	
" 10		"	10	
middle 1		"	10	
" 2		"	14	
" 3		"	14	
" 4		"	18	
" 5		"	18	
" 6		"	21	
" 7		"	42	
South 1		"	10	
" 2		"	14	
" 3		"	8	
" 4		"	18	
" 5		"	34	
" 6		"	32	
" 7		"	25	

HATCHER-SAYRE, INC.

PID/FID Readings Form

Sheet 1 of 2Project Name: Hove-Valley Job Number: 0064-001Date: 9/15/92Sample Location: HNO

Distribution List: _____

Sampler: H. Durham / P. Weaver Sampler's Initials: HDReviewer: P. Weaver Reviewer's Initials: PW

9-10-92 cal. OVA+HNO

9-16-92 cal. HNO 4.55_{span}

Sample #	Sample Taken	Time Reading Taken	Meter Reading (Parts Per Million)	Comments
North 1		2:30	14	Surface readings
" 2		"	8	
" 3		"	1	
" 4		"	2	
" 5		"	4	
" 6		"	2	
" 7		"	4	
" 8		"	14	
" 9		"	12	
middle 1		"	2	
2		"	4	
3		"	1	
4		"	7	
5		"	8	
6		"	8	
7		"	20	
8		"	30	
9		"	20	
10		"	10	
South 1		"	1	
2		"	1	
3		"	2	
4		"	1.5	
5		"	3	

0028
Sheet 2 of 2

Project Name: Howe Valley Job Number: 0564-001 Date: 9/16/92

Sample Location: SASP #1 Distribution List:

Sampler: K. Durham / P. Weaver **Sampler's Initials:** KD _____

Reviewer: P. Weaver Reviewer's initials: PW

9-10-92 cal. OVA & H₂O 9-16-92 cal. H₂O 4.55 *spms*

[illegible]

HATCHER-SAYRE, INC. PID/FID Readings Form

Sheet 1 of 2

Project Name: Howe-Valley Job Number: 0064-001

Date: 9/16/92

Sample Location: SASP #1
HNU

Distribution List:

Sampler: K. Durham / P. Weaver Sampler's Initials: VD

Reviewer: P. Weaver Reviewer's Initials: PW

9-10-92 cal. OVA & HNU

9-16-92 cal. HNU 4.55 span

Sample #	Time		Meter Reading (Parts Per Million)	Comments
	Sample Taken	Reading Taken		
North 1		4.00 pm	7	All readings taken 6" height from arcellon surface.
2		"	1	
3		"	9	
4		"	9	
5		"	7	
6		"	6	
7		"	10	
8		"	20	
9		"	5	
10		"	5	
11		"	17	
12		"	15	
middle 1		"	15	
2		"	7	
3		"	9	
4		"	30	
5		"	9	
6		"	20	
7		"	70	
8		"	5	
9		"	4	
South 1		"	1	
2		"	8	
3		"	3	

HATCHER-SAYRE, INC.

PID/FID Readings Form

Sheet 2 of 2

Project Name: Huac-Valley Job Number: 0064-001

Date: 9/10/92

Project Name: SASP#1 Job Number:
Sample Location: HN0

Distribution List:

Sampler: K. Durham / P. Weaver Sampler's initials: KD

Reviewer: P. Weaver Reviewer's Initials: PW

9-10-92 cal. OVA & HNU 9-16-92 cal. HNU 4-SS sym

[illegible]

Sheet 1 of 1

Date: 9/19/92

Distribution List:

HNv

9-17-92

cat. OVA

300 span

9-16-92 cal/HNU 4-SS

[illegible]

[illegible]

Sheet 1 of 1

Date: 9/19/92

Distribution List:

Reviewer: P. Wever Reviewer's Initials: PW

9-17-92 col. OVA 300 span 9-16-92 col. H.W. 455 span

[illegible]

9-17-92 cal. OVA 300 spm. 9-16-92 cal H/WY-SS_{pm}

DATE: 7/24/92	<u>FIGURE 4</u> PID/FID READINGS FORM.	HATCHER-SAYRE, INC. LEXINGTON, KY
DRAWN BY: PDH		CLIENT NO.: 0064-001
APPROVED BY: JDK		

HATCHER-SAYRE, INC.
PID Readings Form

Sheet 1 of 1

0036

0036
Date: 9/24/92

Distribution List:

Project Name: Hawe Valley Job Number: 0064-001

Sample Location: North area / ion area
HNU

Sampler: Kevin Durham / Paul Weaver Sampler's Initials: KD
PW

Reviewer: P. Weaver Reviewer's initials: [initials]

9-24-92 col. HNU 3-SSspan

[illegible]

DATE: 7/24/92

DRAWN BY: PDH

APPROVED BY: JDK

FIGURE 4

PID/FID READINGS FORM

HATCHER-SAYRE, INC.
LEXINGTON, KY

CLIENT NO.: 0084-001

Project Name: Home Valley Job Number: 0064-001
Sample Location: NASP3

0037

Date: 9-25-92

Distribution List:

Sampler: KD & PW

Sampler's Initials: *LD*

Reviewer: P. Weaver

Reviewer's Initials: FW

9-24-92 col. HNU 3:55_{span}

[illegible]

DATE: 7/24/92

DRAWN BY: PDB

APPROVED BY: JDK

FIGURE 4

PID/FID READINGS FORM

HATCHER-SAYRE, INC.
LEWISTON, KY

CLIENT NO.: 0084-001

68

Sheet 1 of 1

0038

Project Name: Howe-Valley Job Number: 0064-001

Date: 9/25/92

Sample Location: North aeration

Distribution List:

ANU

Sampler: K Durham Sampler's Initials: KD

Reviewer: P. Weaver Reviewer's Initials: PW

9-24-92 col. HNU 3.55span

[illegible]

DATE: 7/24/92

DRAWN BY: PDE

APPROVED BY: JDK

FIGURE 4

PID/FID READINGS FORM

HATCHER-SAYRE, INC.
LEXINGTON, KY

CLIENT NO.: 0064-001

Date: 9/26/92
Distribution List:

Reviewer: F. W. Paster Reviewer's Initials: FW

9-24-92 cal, HNU 3.55 *size*

DATE: 7/24/92	<p align="center"><u>FIGURE 4</u></p> <p align="center">PID/FID READINGS FORM</p>	HATCHER-SAYRE, INC.
DRAWN BY: PDE		LEXINGTON, KY
APPROVED BY: JDK		CLIENT NO.: 0064-001

0040

Project Name: Howe-Valley Job Number: 0064-001

Date: 7/28/92

Sample Location: North areation area

Distribution List:

Sampler: K. Durham / P. Weaver

Sampler's initials: *KD*

Reviewer: P. Wewer

Reviewer's initials: PW

9-24-92 col. H.N. 3.55 span

[illegible]

DATE: 7/24/92

DRAWN BY: PDE

APPROVED BY: JDK

FIGURE 4

PID/FTD READINGS FORM

HATCHER-SAYRE, INC.
LEXINGTON, KY

CLIENT NO.: 0084-001

APPROVED BY: JDK

CLIENT NO.: 0064-001

PID Readings Form 6 8

0043

Date: 9-30-92

Sample Location: SASP

Distribution List

Sampler: P. Weaver Samplers Signature: P. Weaver
9-24-92 cal. HNW 3.55 cm

[illegible]

Date: 10/1/92

Distribution List:

Reviewer: P. Weaver Reviewer's Initials: PW

9-24-92 cal. HNO 3-SS span

[illegible]

Sheet 1 of 1

Date: ~~10/1/92~~ 10/1/92

Distribution List:

Reviewer: P. Weaver Reviewer's Initials: PW

9-24-92 col. HNo 355_{spn}

[illegible]

~~68 0046~~

Date: ~~2/10~~ 10/1/92

Distribution List:

Reviewer: P. Weaver Reviewer's Initials: PW

9-24-92 cal. HNU 3.55 sp. in

[illegible]

HATCHER-SAYRE, INC.
PID/FID Readings Form

Sheet 1 of 1

0052

Date: 10-5-92

Project Name: Horse Valley Job Number: 0064-001

Sample Location: NASP

Sampler: Paul Weaver Sampler's Initials: PW

Reviewer: P. Weaver Reviewer's Initials: PC

10-5-97 Col. OVA span 3000 HNU 2.3 span

[illegible]

[illegible]

68

0054-6-92

Date: 70-6-82

Distribution List

10.5.92 Cal. OVA spun 3cc. HNU spun 2.3

[illegible]

0056 Date: 10-6-82

Distribution List

[illegible]

Sheet 1 of 1

Date: 10/7/92

Distribution List:

Reviewer: P. Weaver Reviewer's Initials: FW

10-7-92 Cal. OVA 300 Span HNC 2.35000

[illegible]

CLIENT NO.: 0084-001

PID Readings Form 8

0061

Date: 10/12/92

Distribution List:

Sampler's initials:

Reviewer's Initials

10-12-92 Cal. OVA 300 300m HNL 500m 2.3

[illegible]

APPROVED BY: JDK

PID/FID READINGS FORM

CLIENT NO.: 0084-001

Sheet 1 of 1

Date: 10-13-92

Distribution List

~~680062~~

10-13-92 Col. DVA 300 upon H24 7.35pm

[illegible]

Sheet 1 of 1

Date: 10-13-92

Distribution List

68 0063

10-13-92 cal. DIA 300 spm HNU 2.3 spm

CLIENT NO.: 0064-001

HATCHER-SAYRE, INC. PID/PTD Readings Form		Sheet 1 of 1		
Project Name: <u>Howe Valley</u>		Date: <u>10-13-92</u>		
Sample Location: <u>5# AS2</u>		Distribution List:		
Sampler: <u>Paul Begley</u>	Reviewer: <u>P. Weaver</u>	Job Number: <u>ADW-01</u>		
Sampler's Initials: <u>P.B.</u>	Reviewer's Initials: <u>PW</u>	6 8 0065		
10-13-92 CAT. OVA 300 spec. H/V 2.3				
Sample #	Sample Time	Reading Time	Meter Reading (Feet per minute)	Comments
North 1	5:45 pm	6:00 pm	28	
2	"	"	21	
3	"	"	28	
4	"	"	24	
Middle 1	"	"	28	
2	"	"	34	
3	"	"	38	
4	"	"	39	
South 1	"	"	26	
2	"	"	15	
3	"	"	37	
4	"	"	24	

[illegible]

APPROVED BY: JDK

HATCHER-SAYRE, INC.
PID Readings Form

Sheet 1 of 1

Project Name: Hove-Valley Job Number: 0061-001

Date: 10/19/92

Sample Location: NASPH 3a
HVV

Distribution List:

Sampler: KD DeThorne Sampler's Initials: KD
De

Reviewer: P. W. raver Reviewer's Initials: PW

10-19-92 cal. OVA 300 span HNU 2.25 span

[illegible]

DATE: 7/24/92

DRAWN BY: PDH

APPROVED BY: JDK

FIGURE 4

PID/FID READINGS FORM

HATCHER-SAYRE, INC.
LEXINGTON, KY

CLIENT NO.: 0084-001

[illegible]

[illegible]

Project Name: HOWE - Valley Job Number: 0064-001

Date: 10-22-92

Sample Location: NASP # Ba

Distribution List

~~68-0073~~

Sampler: Sewa Durham **Samplers Signature:**

Sampler: Keweenaw Samplers Signature: Melvin M. Minter
10-22-92 Cal. OVA 300 sign HNH Spn 1.85

[illegible]

Project Name: HOWE - Valley **Job Number:** 0068-001

Date: 10-22-92

Sample Location: SAS# 3a

Distribution List

68 0074

Sampler: Kevin Durham Samplers Signature: Kevin M. Durham

10-22-92 cal. OUF 300 span HNU 1.85 ~~span~~

[illegible]



6 8 0075

HATCHER SAYRE

1355 PILOT STUDY B 9-17-92 6:30

WO #: 91020102

LAB #: A2I210005-002

DATE RECEIVED: 9/19/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039
1,2-Dichloroethene, Total	ND	1	SW846 8240	9/22- 9/23/92	266039
Tetrachloroethene	ND	1	SW846 8240	9/22- 9/23/92	266039
1,1,1-Trichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	94	(70 - 121)
Toluene-d8	111	(81 - 117)
Bromofluorobenzene	109	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0076

HATCHER SAYRE

1354 PILOT STUDY A 9-17-92 6:30

WO #: 91019
LAB #: A2I210005-001
MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	9/22- 9/23/92	266041

NOTE: AS RECEIVED



6 8 0077

HATCHER SAYRE

1355 PILOT STUDY B 9-17-92 6:30

WO #: 91020
LAB #: A2I210005-002
MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	85	0.5	%	USEPA 160.3	9/22- 9/23/92	266041

NOTE: AS RECEIVED



6 8 0078

HATCHER SAYRE

1356 PILOT STUDY C 9-17-92 6:30

WO #: 91021102

LAB #: A2I210005-003

DATE RECEIVED: 9/19/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039
1,2-Dichloroethene, Total	ND	1	SW846 8240	9/22- 9/23/92	266039
Tetrachloroethene	ND	1	SW846 8240	9/22- 9/23/92	266039
1,1,1-Trichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	92	(70 - 121)
Toluene-d8	108	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0079

HATCHER SAYRE

1356 PILOT STUDY C 9-17-92 6:30

WO #: 91021
LAB #: A2I210005-003
MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	87	0.5	%	USEPA 160.3	9/22- 9/23/92	266041

NOTE: AS RECEIVED



6 8 0080

HATCHER SAYRE

1357 PILOT STUDY D 9-17-92 6:30

WO #: 91022102

LAB #: A2I210005-004

MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039
1,2-Dichloroethene, Total	ND	1	SW846 8240	9/22- 9/23/92	266039
Tetrachloroethene	ND	1	SW846 8240	9/22- 9/23/92	266039
1,1,1-Trichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	94	(70 - 121)
Toluene-d8	110	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0081

HATCHER SAYRE

1357 PILOT STUDY D 9-17-92 6:30

WO #: 91022
LAB #: A2I210005-004
MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	85	0.5	%	USEPA 160.3	9/22- 9/23/92	266041

NOTE: AS RECEIVED



6 8 0002

HATCHER SAYRE

1358 PILOT STUDY E 9-17-92 6:30

WO #: 91023102

LAB #: A2I210005-005

DATE RECEIVED: 9/19/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (mg/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039
1,2-Dichloroethene, Total	ND	1	SW846 8240	9/22- 9/23/92	266039
Tetrachloroethene	ND	1	SW846 8240	9/22- 9/23/92	266039
1,1,1-Trichloroethane	ND	1	SW846 8240	9/22- 9/23/92	266039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	91	(70 - 121)
Toluene-d8	107	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0083

HATCHER SAYRE

1358 PILOT STUDY E 9-17-92 6:30

WO #: 91023
LAB #: A2I210005-005
MATRIX: SOLID

DATE RECEIVED: 9/19/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	89	0.5	%	USEPA 160.3	9/22- 9/23/92	266041

NOTE: AS RECEIVED



6 8 0084

HATCHER SAYRE

1359 FIELD BLANK 9-16-92 9:00

WO #: 91025101

LAB #: A2I210005-006

DATE RECEIVED: 9/19/92

MATRIX: WATER

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	9/22/92	267012
1,2-Dichloroethene, Total	ND	5	SW846 8240	9/22/92	267012
Tetrachloroethene	ND	5	SW846 8240	9/22/92	267012
1,1,1-Trichloroethane	ND	5	SW846 8240	9/22/92	267012

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	95	(76 - 114)
Toluene-d8	99	(88 - 110)
Bromofluorobenzene	98	(86 - 115)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0065

QUALITY CONTROL SECTION



6 8 0036

QUALITY CONTROL NARRATIVE

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with the exception of those items noted.

The matrix spike and matrix spike duplicates (MS/MSD) contained in this quality control report were generated as part of the laboratory QA/QC program requirements. These requirements include the analysis of a MS/MSD on a one in twenty basis. Therefore, the associated batch number indicated on the MS/MSD reports may not reflect the same batch numbers as those of the samples contained in the analytical report.



QUALITY ASSURANCE/QUALITY CONTROL
PROGRAM ELEMENTS

WADSWORTH/ALERT Laboratories conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data.

Quality control samples provide a mechanism for assessing the overall quality of the analytical process and can be used to indicate the useability of the analytical data. These QC samples include check samples, method blanks, matrix spikes and surrogate spikes.

The CHECK SAMPLE is used to demonstrate that all laboratory analytical processes were functioning properly when the associated sample batch was prepared and analyzed. The check sample is a simulated sample spiked with representative analytes prepared and analyzed with a batch of samples. Spike recovery values from this check sample must meet laboratory established acceptance criteria.

The METHOD BLANK is used to measure the level of any background contamination in the laboratories analytical system. The method blank is carried through the entire process, including the preparation, and consists of all of the reagents specific to the method.

All analytes of interest in the method blank for organic analyses must be below the method detection limits except for the following compounds:

Volatiles

Methylene chloride
2-Butanone
Acetone

Semivolatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate
Di-n-octyl phthalate

These commonly-detected laboratory contaminants may be present in the method blank at up to five times the method reporting limit.

For metals analyses, if any analyte concentration in the method blank is above the method reporting limit, then the lowest concentration of that analyte in the associates samples must be ten times the blank concentration. Otherwise, all samples associated with the blank which are less than ten times the blank are redigested and reanalyzed.

The laboratory performs MATRIX SPIKES (MS) and MATRIX SPIKE DUPLICATES (MSD) to indicate any matrix effects within a given sample. They also allow the laboratory to gather precision and bias data for a specific method and matrix.



Since matrix effects may bias percent recovery, the laboratory performs corrective action if the precision (RPD) criteria of the MS/MSD is not met.

SURROGATE SPIKES are used by the laboratory to indicate method bias introduced by the sample matrix during the preparation and analysis of a specific method. Surrogates are normally organic compounds similar to those being analyzed for the GC or GC/MS. If surrogate recoveries fail to meet laboratory acceptance criteria it does not necessarily indicate poor laboratory control but may in fact be attributed to a sample matrix effect. In the event that surrogates fail criteria, a reparation and reanalysis is performed to determine the presence of a matrix effect.

The laboratory uses the following surrogate recovery criteria for all organic analyses:

For the GC/MS Base/Neutral fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For the GC/MS Acid fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For GC/ECD Pesticides, the surrogate criteria requires that one of the two surrogates must meet recovery limits.

For Volatiles, PCBs and Herbicides all surrogates utilized must meet surrogate recovery limits.



6 8 0089

CHECK SAMPLE REPORT

QC BATCH: 266039
LAB #: A2I220000-039 C
MATRIX: SOLID

PREPARATION DATE: 9/22/92
DATE ANALYZED: 9/23/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	86	(56-139)
Trichloroethene	88	(79-128)
Chlorobenzene	90	(79-118)
Toluene	88	(78-122)
Benzene	83	(77-122)



6 8 0090

CHECK SAMPLE REPORT

QC BATCH: 267012
LAB #: A2I230000-012 C
MATRIX: WATER

PREPARATION DATE: 9/22/92
DATE ANALYZED: 9/22/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	88	(67-126)
Trichloroethene	96	(79-130)
Chlorobenzene	98	(86-116)
Toluene	99	(82-119)
Benzene	97	(79-122)



6 8 0091

CHECK SAMPLE REPORT

LAB #: A2I210005

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Solids, Total (TS)	98	(89-110)	SOLID	9/22- 9/23/92	266041



6 8 0092

INTRA-LAB BLANK REPORT

LAB #: A2I220000-039

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(mg/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	1	9/22- 9/23/92	266039
1,2-Dichloroethene, Total	ND	1	9/22- 9/23/92	266039
Tetrachloroethene	ND	1	9/22- 9/23/92	266039
1,1,1-Trichloroethane	ND	1	9/22- 9/23/92	266039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	97	(70 - 121)
Toluene-d8	111	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0093

INTRA-LAB BLANK REPORT

LAB #: A2I230000-012

MATRIX: WATER

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/L)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	9/22/92	267012
1,2-Dichloroethene, Total	ND	5	9/22/92	267012
Tetrachloroethene	ND	5	9/22/92	267012
1,1,1-Trichloroethane	ND	5	9/22/92	267012

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	96	(76 - 114)
Toluene-d8	102	(88 - 110)
Bromofluorobenzene	99	(86 - 115)

NOTE:

ND (NONE DETECTED)



6 8

0094

INTRA-LAB BLANK REPORT

LAB #: A2I210005

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	SOLID	9/22- 9/23/92	266041

NOTE:

ND (NONE DETECTED)



6 8

0095

MATRIX SPIKE REPORT

QC BATCH: 266039
LAB #: A2I210005-004 S
MATRIX: SOLID

WO #: 91022
PREPARATION DATE: 9/22/92
DATE ANALYZED: 9/23/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	219	212	(59-153)	3	(0- 27)
Trichloroethene	90	88	(77-134)	3	(0- 16)
Chlorobenzene	94	92	(77-122)	1	(0- 20)
Toluene	92	92	(73-139)	1	(0- 21)
Benzene	91	90	(81-127)	2	(0- 19)



6 8 0096

MATRIX SPIKE REPORT

QC BATCH: 265040
LAB #: A2I120020-006 S
MATRIX: WATER

WO #: 89095
PREPARATION DATE: 9/18/92
DATE ANALYZED: 9/18/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	101	100	(68-126)	1	(0- 20)
Trichloroethene	101	102	(82-130)	1	(0- 13)
Chlorobenzene	100	103	(86-115)	2	(0- 10)
Toluene	100	102	(80-123)	2	(0- 15)
Benzene	103	104	(80-125)	2	(0- 13)



WADSWORTH/ **Laboratories**
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6 8 0098

ANALYTICAL REPORT
REVISED

PROJECT NO. 0064-001

HOWE-VALLEY

Presented to:

JIM KNAUSS

HATCHER SAYRE

WADSWORTH/ALERT LABORATORIES

Alesia M. Danford

Alesia M. Danford
Project Manager

Mark P. Nebiolo

Mark P. Nebiolo
Laboratory Manager

October 16, 1992



PROJECT NARRATIVE

The following report contains analytical results for ten soil samples and seven Quality Control samples submitted to WADSWORTH/ALERT Laboratories by Hatcher Sayre, Inc., from the Howe Valley site, project number 0064-001. The samples were received September 26, 1992, according to documented sample acceptance procedures.

WADSWORTH/ALERT Laboratories utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the following page in accordance with the methods indicated. A summary of QC data for these analyses is included at the end of the report.



6 8 0100

ANALYTICAL METHODS SUMMARY

Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

<u>Parameters</u>	<u>Methods</u>
TCLP Extraction	SW486 1311
Volatile Organics, GC/MS	SW846 8240
Silver	SW846 6010
Cadmium	SW846 6010
Chromium	SW846 6010
Nickel	SW846 6010
Lead	SW846 6010
Cyanide, Total	SW846 9010
Cyanide, Amenable	SW846 9010
Solids, Total (TS)	USEPA 160.3 MODIFIED
Cyanide, amenable	SW846 9012

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.
- USEPA 600/4-79-02, "Methods for Chemical Analysis of Water and Wastes", March, 1983.



6 8 0101

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
92968	A2I280009-001	1360 WEST SURFACE 9-24-92 1:45
92969	A2I280009-002	1361 EAST SURFACE 9-24-92 1:45
92974	A2I280009-003	1362 WEST SURFACE 9-24-92 1:45
92975	A2I280009-004	1363 EAST SURFACE 9-24-92 1:45
92976	A2I280009-005	1364 WEST SUBSURFACE 9-24-92 2:45
92978	A2I280009-006	1365 EAST SUBSURFACE 9-24-92 3:45
92979	A2I280009-007	1366 WEST SUBSURFACE 9-24-92 2:45
92981	A2I280009-008	1367 EAST SUBSURFACE 9-24-92 3:45
92982	A2I280009-009	1368 SASP 1 9-24-92 2:05
92983	A2I280009-010	1369 EQUIPMENT BLANK 9-24-92 5:30
92984	A2I280009-011	1370 EQUIPMENT BLANK 9-24-92 5:30
92985	A2I280009-012	1371 EQUIPMENT BLANK 9-24-92 6:00
92986	A2I280009-013	1372 EQUIPMENT BLANK 9-24-92 6:00
92987	A2I280009-014	1374 TRIP BLANK 9-24-92
92988	A2I280009-015	1375 TRIP BLANK 9-24-92
92992	A2I280009-016	1376 FIELD BLANK 9-24-92 2:00
92994	A2I280009-017	1377 SASP 2 9-24-92 2:05

Inorganic Soil
TCLP Analysis



6 8 0101.1

HATCHER SAYRE

1368 SASP 1 9-24-92 2:05

WO #: 92982101

LAB #: A2I280009-009

MATRIX: SOLID

DATE RECEIVED: 9/26/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/01-10/02/92	275049
1,1,1-Trichloroethane	850	620	SW846 8240	10/01-10/02/92	275049
1,1-Dichloroethane	ND	620	SW846 8240	10/01-10/02/92	275049
Tetrachloroethene	19,000	620	SW846 8240	10/01-10/02/92	275049

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	118	(70 - 121)
Toluene-d8	115	(81 - 117)
Bromofluorobenzene	112	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

ELEVATED DETECTION LIMITS DUE TO TIC(S).



6 8 0102

HATCHER SAYRE

1369 EQUIPMENT BLANK 9-24-92 5:30

WO #: 92983
LAB #: A2I280009-010
MATRIX: WATER

DATE RECEIVED: 9/26/92

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Silver	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Cadmium	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Chromium	ND	0.02	mg/L	SW846 6010	9/30-10/01/92	274015
Nickel	ND	0.04	mg/L	SW846 6010	9/30-10/01/92	274015
Lead	ND	0.1	mg/L	SW846 6010	9/30-10/01/92	274015

NOTE:

AS RECEIVED

(NONE DETECTED)



6 8 0103

HATCHER SAYRE

1370 EQUIPMENT BLANK 9-24-92 5:30

WO #: 92984

LAB #: A2I280009-011

MATRIX: WATER

DATE RECEIVED: 9/26/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Cyanide, Total	ND	0.005	mg/L	SW846 9010	10/01/92	275028
Cyanide, amenable	ND	0.005	mg/L	SW846 9012	10/01/92	275028

NOTE: AS RECEIVED
NO NONE DETECTED



6 8 0104

HATCHER SAYRE

1371 EQUIPMENT BLANK 9-24-92 6:00

WO #: 92985
LAB #: A21280009-012
MATRIX: WATER

DATE RECEIVED: 9/26/92

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Silver	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Cadmium	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Chromium	ND	0.02	mg/L	SW846 6010	9/30-10/01/92	274015
Nickel	ND	0.04	mg/L	SW846 6010	9/30-10/01/92	274015
Lead	ND	0.1	mg/L	SW846 6010	9/30-10/01/92	274015

NOTE:

AS RECEIVED
(NONE DETECTED)



6 8 0105

HATCHER SAYRE

1372 EQUIPMENT BLANK 9-24-92 6:00

WO #: 92986

LAB #: A2I280009-013

DATE RECEIVED: 9/26/92

MATRIX: WATER

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Cyanide, Total	ND	0.005	mg/L	SW846 9010	10/01/92	275028
Cyanide, amenable	ND	0.005	mg/L	SW846 9012	10/01/92	275028

NOTE: AS RECEIVED
NI NONE DETECTED



6 8 0106

HATCHER SAYRE

1374 TRIP BLANK 9-24-92

WO #: 92987
LAB #: A2I280009-014
MATRIX: WATER

DATE RECEIVED: 9/26/92

----- REQUESTED METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Silver	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Cadmium	ND	0.01	mg/L	SW846 6010	9/30-10/01/92	274015
Chromium	ND	0.02	mg/L	SW846 6010	9/30-10/01/92	274015
Nickel	ND	0.04	mg/L	SW846 6010	9/30-10/01/92	274015
Lead	ND	0.1	mg/L	SW846 6010	9/30-10/01/92	274015

NOTE:

AS RECEIVED
(NONE DETECTED)



6 8 0107

HATCHER SAYRE

1375 TRIP BLANK 9-24-92

WO #: 92988

LAB #: A2I280009-015

MATRIX: WATER

DATE RECEIVED: 9/26/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Cyanide, Total	ND	0.005	mg/L	SW846 9010	10/01/92	275028
Cyanide, amenable	ND	0.005	mg/L	SW846 9012	10/01/92	275028

NOTE: AS RECEIVED
ND NONE DETECTED



6 8 0108

HATCHER SAYRE

1376 FIELD BLANK 9-24-92 2:00

WO #: 92992101

LAB #: A2I280009-016

MATRIX: WATER

DATE RECEIVED: 9/26/92

TCLP EXTRACTION DATE: 9/30/92

----- REQUESTED PARAMETERS -----

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching
Procedure Method 1311 (55 FR 26986)

<u>PARAMETER</u>	<u>RESULT</u> <u>(mg/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Tetrachloroethene	ND	0.005	SW846 8240	10/02/92	275039
Trichloroethene	ND	0.005	SW846 8240	10/02/92	275039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	101	(76 - 114)
Toluene-d8	100	(88 - 110)
Bromofluorobenzene	104	(86 - 115)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0109

HATCHER SAYRE

1377 SASP 2 9-24-92 2:05

WO #: 92994101

LAB #: A2I280009-017

MATRIX: SOLID

DATE RECEIVED: 9/26/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/01-10/02/92	275049
1,1,1-Trichloroethane	ND	620	SW846 8240	10/01-10/02/92	275049
1,1-Dichloroethane	ND	620	SW846 8240	10/01-10/02/92	275049
Tetrachloroethene	8,500	620	SW846 8240	10/01-10/02/92	275049

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	111	(70 - 121)
Toluene-d8	115	(81 - 117)
Bromofluorobenzene	119	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

ELEVATED DETECTION LIMITS DUE TO TIC(S).



6 8 0110

QUALITY CONTROL SECTION



6 8 0111

QUALITY CONTROL NARRATIVE

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with the exception of those items noted.

The matrix spike and matrix spike duplicate (MS/MSD) contained in this quality control report were generated as part of the laboratory QA/QC program requirements. These requirements include the analysis of a MS/MSD on a one in twenty basis. Therefore, the associated batch number indicated on the MS/MSD report may not reflect the same batch number as those of the samples contained in the analytical report.



QUALITY ASSURANCE/QUALITY CONTROL
PROGRAM ELEMENTS

WADSWORTH/ALERT Laboratories conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data.

Quality control samples provide a mechanism for assessing the overall quality of the analytical process and can be used to indicate the useability of the analytical data. These QC samples include check samples, method blanks, matrix spikes and surrogate spikes.

The CHECK SAMPLE is used to demonstrate that all laboratory analytical processes were functioning properly when the associated sample batch was prepared and analyzed. The check sample is a simulated sample spiked with representative analytes prepared and analyzed with a batch of samples. Spike recovery values from this check sample must meet laboratory established acceptance criteria.

The METHOD BLANK is used to measure the level of any background contamination in the laboratories analytical system. The method blank is carried through the entire process, including the preparation, and consists of all of the reagents specific to the method.

All analytes of interest in the method blank for organic analyses must be below the method detection limits except for the following compounds:

Volatiles

Methylene chloride
2-Butanone
Acetone

Semivolatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate
Di-n-octyl phthalate

These commonly-detected laboratory contaminants may be present in the method blank at up to five times the method reporting limit.

For metals analyses, if any analyte concentration in the method blank is above the method reporting limit, then the lowest concentration of that analyte in the associates samples must be ten times the blank concentration. Otherwise, all samples associated with the blank which are less than ten times the blank are redigested and reanalyzed.

The laboratory performs MATRIX SPIKES (MS) and MATRIX SPIKE DUPLICATES (MSD) to indicate any matrix effects within a given sample. They also allow the laboratory to gather precision and bias data for a specific method and matrix.



Since matrix effects may bias percent recovery, the laboratory performs corrective action if the precision (RPD) criteria of the MS/MSD is not met.

SURROGATE SPIKES are used by the laboratory to indicate method bias introduced by the sample matrix during the preparation and analysis of a specific method. Surrogates are normally organic compounds similar to those being analyzed for the GC or GC/MS. If surrogate recoveries fail to meet laboratory acceptance criteria it does not necessarily indicate poor laboratory control but may in fact be attributed to a sample matrix effect. In the event that surrogates fail criteria, a reparation and reanalysis is performed to determine the presence of a matrix effect.

The laboratory uses the following surrogate recovery criteria for all organic analyses:

For the GC/MS Base/Neutral fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For the GC/MS Acid fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For GC/ECD Pesticides, the surrogate criteria requires that one of the two surrogates must meet recovery limits.

For Volatiles, PCBs and Herbicides all surrogates utilized must meet surrogate recovery limits.

6 8 0114



CHECK SAMPLE REPORT

QC BATCH: 275039
LAB #: A2J010000-039 C
MATRIX: SOLID

PREPARATION DATE: 10/02/92
DATE ANALYZED: 10/02/92
TCLP EXTRACTION DATE: 9/30/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	106	(50-150)
Trichloroethene	105	(50-150)
Chlorobenzene	113	(50-150)
Toluene	112	(50-150)
Benzene	108	(50-150)



6 8 0115

CHECK SAMPLE REPORT

QC BATCH: 275049
LAB #: A2J010000-049 C
MATRIX: SOLID

PREPARATION DATE: 10/01/92
DATE ANALYZED: 10/02/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	93	(56-139)
Trichloroethene	101	(79-128)
Chlorobenzene	112	(79-118)
Toluene	111	(78-122)
Benzene	107	(77-122)



6 8 0116

CHECK SAMPLE REPORT

LAB #: A2I280009

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
	BATCH: 274015	MATRIX: WATER	
Silver	96	(82-110)	9/30-10/01/92
Cadmium	96	(77-110)	9/30-10/01/92
Chromium	99	(86-110)	9/30-10/01/92
Nickel	96	(81-111)	9/30-10/01/92
Lead	94	(80-116)	9/30-10/01/92



6 8 0117

CHECK SAMPLE REPORT

LAB #: A21280009

*** TCLP ***

TCLP EXTRACTION DATE: 9/30/92

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS	PREPARATION - ANALYSIS DATE
	BATCH: 274054	MATRIX: SOLID	
Silver	89	(50-150)	9/30-10/01/92
Cadmium	84	(50-150)	9/30-10/01/92
Chromium	88	(50-150)	9/30-10/01/92
Nickel	84	(50-150)	9/30-10/01/92
Lead	82	(50-150)	9/30-10/01/92



6 8 0118

CHECK SAMPLE REPORT

QC BATCH: 274058
LAB #: A2I300000-058 C
MATRIX: WATER

PREPARATION DATE: 9/30/92
DATE ANALYZED: 9/30/92

----- Cyanide -----		
COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Cyanide	84	(56-117)



6 8 0119

CHECK SAMPLE REPORT

QC BATCH: 275028
LAB #: A2J010000-028 C
MATRIX: WATER

PREPARATION DATE: 10/01/92
DATE ANALYZED: 10/01/92

----- Cyanide -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Cyanide	56	(56-117)



6 8 0120

CHECK SAMPLE REPORT

QC BATCH: 274008
LAB #: A2I300000-008 C
MATRIX: SOLID

PREPARATION DATE: 9/29/92
DATE ANALYZED: 9/30/92

-----Solids, Total (TS)-----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
Solids, Total (TS)	104	(89-110)



6 8 0121

INTRA-LAB BLANK REPORT

LAB #: A2J010000-039

MATRIX: WATER

TCLP EXTRACTION DATE: 9/30/92

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(mg/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Tetrachloroethene	ND	0.005	10/02/92	275039
Trichloroethene	ND	0.005	10/02/92	275039

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	103	(76 - 114)
Toluene-d8	102	(88 - 110)
Bromofluorobenzene	104	(86 - 115)

NOTE:

NI - NOT DETECTED



6 8 0122

INTRA-LAB BLANK REPORT

LAB #: A2J010000-049

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Styrene	ND	620	10/01-10/02/92	275049
1,1,2,2-Tetrachloroethane	ND	620	10/01-10/02/92	275049
Tetrachloroethene	ND	620	10/01-10/02/92	275049
Toluene	ND	620	10/01-10/02/92	275049
1,1,1-Trichloroethane	ND	620	10/01-10/02/92	275049
1,1,2-Trichloroethane	ND	620	10/01-10/02/92	275049
Trichloroethene	ND	620	10/01-10/02/92	275049
Vinyl chloride	ND	1,200	10/01-10/02/92	275049
Xylenes, Total	ND	620	10/01-10/02/92	275049

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	109	(70 - 121)
Toluene-d8	111	(81 - 117)
Bromofluorobenzene	108	(74 - 121)

NOTES:

ND (NONE DETECTED)



6 8 0123

INTRA-LAB BLANK REPORT

LAB #: A2I280009

----- METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>
		BATCH: 274015	MATRIX: WATER		
Silver	ND	0.01	mg/L	SW846 6010	9/30-10/01/92
Cadmium	ND	0.01	mg/L	SW846 6010	9/30-10/01/92
Chromium	ND	0.02	mg/L	SW846 6010	9/30-10/01/92
Nickel	ND	0.04	mg/L	SW846 6010	9/30-10/01/92
Lead	ND	0.1	mg/L	SW846 6010	9/30-10/01/92

NOTE:

NO NONE DETECTED



6 8 0124

INTRA-LAB BLANK REPORT

LAB #: A2I280009

*** TCLP ***

TCLP EXTRACTION DATE: 9/30/92

----- METALS -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>
		BATCH: 274054	MATRIX: SOLID		
Silver	ND	0.1	mg/L	SW846 6010	9/30-10/01/92
Cadmium	ND	0.1	mg/L	SW846 6010	9/30-10/01/92
Chromium	ND	0.1	mg/L	SW846 6010	9/30-10/01/92
Nickel	ND	0.04	mg/L	SW846 6010	9/30-10/01/92
Lead	ND	0.1	mg/L	SW846 6010	9/30-10/01/92

NOTE:

NO NONE DETECTED



6 8 0125

INTRA-LAB BLANK REPORT

LAB #: A2I300000-058 B

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Cyanide	ND	0.25	mg/kg	9/30/92	274058

NOTE:

ND (NONE DETECTED)



6 8 0126

INTRA-LAB BLANK REPORT

LAB #: A2J010000-028 B

MATRIX: WATER

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Cyanide	ND	0.005	mg/L	10/01/92	275028

NOTE:

NO SENSE DETECTED



6 8 0127

INTRA-LAB BLANK REPORT

LAB #: A21300000-008 B

MATRIX: SOLID

- - - - - INORGANIC ANALYTICAL REPORT - - - - -

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	9/29- 9/30/92	274008

NOTE:

NO NONE DETECTED



6 8 0128

MATRIX SPIKE REPORT

QC BATCH: 266039
LAB #: A2I210005-004 S
MATRIX: SOLID

WO #: 91022
PREPARATION DATE: 9/22/92
DATE ANALYZED: 9/23/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	219	212	(59-153)	3	(0- 27)
Trichloroethene	90	88	(77-134)	3	(0- 16)
Chlorobenzene	94	92	(77-122)	1	(0- 20)
Toluene	92	92	(73-139)	1	(0- 21)
Benzene	91	90	(81-127)	2	(0- 19)



6 8 0129

MATRIX SPIKE REPORT

QC BATCH: 274062
LAB #: A2I170035-007 S
MATRIX: WATER

WO #: 90324
PREPARATION DATE: 9/29/92
DATE ANALYZED: 9/29/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	92	94	(68-126)	1	(0- 20)
Trichloroethene	98	101	(82-130)	3	(0- 13)
Chlorobenzene	97	100	(86-115)	4	(0- 10)
Toluene	90	92	(80-123)	2	(0- 15)
Benzene	90	95	(80-125)	6	(0- 13)



6 8 0130

METALS SPIKE REPORT

WATER - ICP

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION- ANALYSIS DATE	W/O#
Silver	95	95	(70-112)	0	(0-20)	9/08-9/09/92	87329
Aluminum	104	102	(52-134)	2	(0-20)	9/08-9/09/92	87329
Arsenic	98	98	(53-138)	0	(0-20)	9/08-9/09/92	87329
Boron	101	104	(73-110)	3	(0-20)	9/14-9/16/92	87704
Barium	98	97	(73-115)	1	(0-20)	9/08-9/09/92	87329
Beryllium	99	98	(72-110)	1	(0-20)	9/08-9/09/92	87329
Calcium	98	97	(38-143)	1	(0-20)	9/08-9/09/92	87329
Cadmium	94	92	(69-112)	2	(0-20)	9/08-9/09/92	87329
Cobalt	98	94	(72-109)	4	(0-20)	9/08-9/09/92	87329
Chromium	96	97	(75-110)	1	(0-20)	9/08-9/09/92	87329
Copper	97	96	(75-110)	1	(0-20)	9/08-9/09/92	87329
Iron	101	99	(56-129)	2	(0-20)	9/08-9/09/92	87329
Potassium	96	96	(48-147)	0	(0-20)	9/08-9/09/92	87329
Magnesium	96	96	(57-127)	0	(0-20)	9/08-9/09/92	87329
Manganese	96	95	(72-112)	1	(0-20)	9/08-9/09/92	87329
Molybdenum	109	108	(69-122)	1	(0-20)	9/25-9/30/92	90677
Sodium	97	97	(54-134)	0	(0-20)	9/08-9/09/92	87329
Nickel	94	93	(70-112)	1	(0-20)	9/08-9/09/92	87329
Lead	97	100	(68-112)	3	(0-20)	9/01-9/10/92	96261
Antimony	96	94	(70-115)	2	(0-20)	9/08-9/09/92	87329
Selenium	100	95	(47-128)	5	(0-20)	9/08-9/09/92	87329
Silicon	107	108	(83-111)	1	(0-20)	1/31-1/31/92	36719
Tin	91	93	(73-123)	2	(0-20)	7/03-7/13/92	73705
Strontium	78	77	(83-112)	1	(0-20)	6/24-6/26/92	71292
Titanium	110	116	(90-111)	5	(0-20)	9/15-9/17/91	98360
Thallium	99	97	(50-121)	2	(0-20)	9/24-8/23/92	84055
Tungsten	92	94	(72-112)	2	(0-20)	9/25-9/30/92	90677
Vanadium	99	98	(72-112)	1	(0-20)	9/08-9/09/92	87329
Zinc	98	97	(71-114)	1	(0-20)	9/08-9/09/92	87329



6 8 0131

MATRIX SPIKE REPORT

LAB #: A2I280009-003

*** TCLP ***

TCLP EXTRACTION DATE: 9/30/92

----- METALS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS	PREPARATION - ANALYSIS DATE
	BATCH: 274054 MATRIX: SOLID					
Silver	96	94	(50-150)	2	(0- 20)	9/30-10/01/92
Cadmium	89	86	(50-150)	4	(0- 20)	9/30-10/01/92
Chromium	103	102	(50-150)	1	(0- 20)	9/30-10/01/92
Nickel	90	86	(50-150)	4	(0- 20)	9/30-10/01/92
Lead	90	89	(50-150)	1	(0- 20)	9/30-10/01/92



6 8 0132

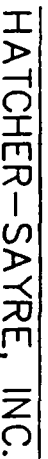
MATRIX SPIKE REPORT

QC BATCH: 275028
LAB #: A2I190012-004 S
MATRIX: WATER

WO #: 90852
PREPARATION DATE: 10/01/92
DATE ANALYZED: 10/01/92

----- Cyanide -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
Cyanide	60	46	(18-123)	27	(0- 68)



CHAIN OF CUSTODY RECORD

PROJECT		PROJECT NO.		SAMPLE'S SIGNATURE		PRINTED NAME		HATCHER-SAYRE, INC.		SAMPLE NO.		DATE		TIME		MATRIX		NUMBER OF CONTAINERS		SAMPLE TYPE (CHECK BOX)		ANALYSES REQUIRED		PRESERVATION	
PROJECT NAME		PROJECT NO.		SAMPLE'S SIGNATURE		PRINTED NAME		HATCHER-SAYRE, INC.		SAMPLE NO.		DATE		TIME		MATRIX		NUMBER OF CONTAINERS		SAMPLE TYPE (CHECK BOX)		ANALYSES REQUIRED		PRESERVATION	
Howe Valley		0064-001		Paul Weaver		Paul Weaver		HATCHER-SAYRE, INC.		SAMPLE NO.		DATE		TIME		MATRIX		NUMBER OF CONTAINERS		SAMPLE TYPE (CHECK BOX)		ANALYSES REQUIRED		PRESERVATION	
360 west Surface		9/24/92		1:45		Soil		1		X								TCP		Cadmium		TCP		X	
361 East Surface		9/24/92		1:45		Soil		1		X								TCP		Chromium (total)		TCP		X	
362 West Surface		9/24/92		1:45		Soil		1		X								TCP		Lead		TCP		X	
363 East Surface		9/24/92		1:45		Soil		1		X								TCP		Nickel		TCP		X	
364 West Surface		9/24/92		2:45		Soil		1		X								TCP		Silver		TCP		X	
365 East Surface		9/24/92		3:45		Soil		1		X								TCP		Cyanide (total)		TCP		X	
366 West Surface		9/24/92		2:45		Soil		1		X								TCP		tetrachloroethene		TCP		X	
367 East Surface		9/24/92		3:45		Soil		1		X								TCP		trichloroethene		TCP		X	
368 West Surface		9/24/92		2:05		Soil		1		X								TCP		1,1,1-Trichloroethene		TCP		X	
369 Equipment Blank		9/24/92		5:30		Blank		1		X								TCP		1,2-Dichloroethene		TCP		X	
370 Equipment Blank		9/24/92		5:30		Blank		1		X								TCP		Cadmium		TCP		X	
371 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Chromium (total)		TCP		X	
372 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Lead		TCP		X	
373 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Nickel		TCP		X	
374 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Silver		TCP		X	
375 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Cyanide (total)		TCP		X	
376 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		tetrachloroethene		TCP		X	
377 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		trichloroethene		TCP		X	
378 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		1,1,1-Trichloroethene		TCP		X	
379 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		1,2-Dichloroethene		TCP		X	
380 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Cadmium		TCP		X	
381 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Chromium (total)		TCP		X	
382 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Lead		TCP		X	
383 Equipment Blank		9/24/92		6:00		Blank		1		X								TCP		Nickel		TCP		X	
384 Equipment Blank		9/24/92</																							



WADSWORTH/
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6 8

0135

ANALYTICAL REPORT

PROJECT NO. 0064-001

HOWE VALLEY

Presented to:

JIM KNAUSS

HATCHER SAYRE

WADSWORTH/ALERT LABORATORIES

Alesia M. Danford
Alesia M. Danford
Project Manager

Mark P. Nebiolo

Mark P. Nebiolo
Laboratory Manager

October 16, 1992

Laboratories:

Product: PA
City: Lakewood



6 8 0136

PROJECT NARRATIVE

The following report contains analytical results for four solid samples submitted to WADSWORTH/ALERT Laboratories by Hatcher Sayre, Inc., from the Howe Valley site, project number 0064-001. The samples were received September 29, 1992, according to documented sample acceptance procedures.

WADSWORTH/ALERT Laboratories utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the following page in accordance with the methods indicated. A summary of QC data for these analyses is included at the end of the report.



6 8 0137

ANALYTICAL METHODS SUMMARY

Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Volatile Organics, GC/MS
Solids, Total (TS)

Methods

SW846 8240
USEPA 160.3 MODIFIED

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.
- USEPA 600/4-79-02, "Methods for Chemical Analysis of Water and Wastes", March, 1983.



6 8 0138

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
93348	A2I290029-001	1384 NASP1 9-28-92 5:50
93349	A2I290029-002	1385 NASP2 9-28-92 5:50
93350	A2I290029-003	1386 NASP3 9-28-92 5:50
93351	A2I290029-004	1387 NASP4 9-28-92 5:50



6 8 0139

HATCHER SAYRE

1384 NASP1 9-28-92 5:50

WO #: 93348101

LAB #: A2I290029-001

DATE RECEIVED: 9/29/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	10/08/92	282011
1,2-Dichloroethene, Total	ND	5	SW846 8240	10/08/92	282011
Tetrachloroethene	6	5	SW846 8240	10/08/92	282011
1,1,1-Trichloroethane	ND	5	SW846 8240	10/08/92	282011

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	98	(70 - 121)
Toluene-d8	104	(81 - 117)
Bromofluorobenzene	90	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0140

HATCHER SAYRE

1384 NASP1 9-28-92 5:50

WO #: 93348
LAB #: A2I290029-001
MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	87	0.5	%	USEPA 160.3	10/01-10/02/92	275055

NOTE: AS RECEIVED



6 8 0141

HATCHER SAYRE

1385 NASP2 9-28-92 5:50

WO #: 93349101

LAB #: A2I290029-002

MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	10/07/92	282011
1,2-Dichloroethene, Total	ND	5	SW846 8240	10/07/92	282011
Tetrachloroethene	17	5	SW846 8240	10/07/92	282011
1,1,1-Trichloroethane	ND	5	SW846 8240	10/07/92	282011

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	112	(70 - 121)
Toluene-d8	102	(81 - 117)
Bromofluorobenzene	99	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0142

HATCHER SAYRE

1385 NASP2 9-28-92 5:50

WO #: 93349

LAB #: A2I290029-002

MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/01-10/02/92	275055

NOTE: AS RECEIVED



6 8 0143

HATCHER SAYRE

1386 NASP3 9-28-92 5:50

WO #: 93350101

LAB #: A2I290029-003

DATE RECEIVED: 9/29/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	10/07/92	282011
1,2-Dichloroethene, Total	ND	5	SW846 8240	10/07/92	282011
Tetrachloroethene	27	5	SW846 8240	10/07/92	282011
1,1,1-Trichloroethane	ND	5	SW846 8240	10/07/92	282011

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	96	(70 - 121)
Toluene-d8	102	(81 - 117)
Bromofluorobenzene	90	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0144

HATCHER SAYRE

1386 NASP3 9-28-92 5:50

WO #: 93350

LAB #: A2I290029-003

MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	87	0.5	%	USEPA 160.3	10/01-10/02/92	275055

NOTE: AS RECEIVED



6 8 0145

HATCHER SAYRE

1387 NASP4 9-28-92 5:50

WO #: 93351101

LAB #: A2I290029-004

MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	10/08/92	283006
1,2-Dichloroethene, Total	ND	5	SW846 8240	10/08/92	283006
Tetrachloroethene	8	5	SW846 8240	10/08/92	283006
1,1,1-Trichloroethane	ND	5	SW846 8240	10/08/92	283006

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	104	(70 - 121)
Toluene-d8	102	(81 - 117)
Bromofluorobenzene	113	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0146

HATCHER SAYRE

1387 NASP4 9-28-92 5:50

WO #: 93351
LAB #: A2I290029-004
MATRIX: SOLID

DATE RECEIVED: 9/29/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/01-10/02/92	275055

NOTE: AS RECEIVED

6 8 0147

QUALITY CONTROL SECTION



6 8 0148

QUALITY CONTROL NARRATIVE

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with the exception of those items noted.

The matrix spike and matrix spike duplicate (MS/MSD) contained in this quality control report were generated as part of the laboratory QA/QC program requirements. These requirements include the analysis of a MS/MSD on a one in twenty basis. Therefore, the associated batch number indicated on the MS/MSD report may not reflect the same batch number as those of the samples contained in the analytical report.



6 8 0149

CHECK SAMPLE REPORT

QC BATCH: 282011
LAB #: A2J080000-011 C
MATRIX: SOLID

PREPARATION DATE: 10/07/92
DATE ANALYZED: 10/07/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	113	(56-139)
Trichloroethene	99	(79-128)
Chlorobenzene	103	(79-118)
Toluene	106	(78-122)
Benzene	106	(77-122)



CHECK SAMPLE REPORT

QC BATCH: 283006
LAB #: A2J090000-006 C
MATRIX: SOLID

PREPARATION DATE: 10/08/92
DATE ANALYZED: 10/08/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	114	(56-139)
Trichloroethene	91	(79-128)
Chlorobenzene	99	(79-118)
Toluene	103	(78-122)
Benzene	103	(77-122)



6 8 0151

CHECK SAMPLE REPORT

LAB #: A2I290029

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Solids, Total (TS)	105	(89-110)	SOLID	10/01-10/02/92	275055



6 8 0152

INTRA-LAB BLANK REPORT

LAB #: A2J080000-011

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	10/07/92	282011
1,2-Dichloroethene, Total	ND	5	10/07/92	282011
Tetrachloroethene	ND	5	10/07/92	282011
1,1,1-Trichloroethane	ND	5	10/07/92	282011

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	95	(70 - 121)
Toluene-d8	102	(81 - 117)
Bromofluorobenzene	93	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0153

INTRA-LAB BLANK REPORT

LAB #: A2J090000-006

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	10/08/92	283006
1,2-Dichloroethene, Total	ND	5	10/08/92	283006
Tetrachloroethene	ND	5	10/08/92	283006
1,1,1-Trichloroethane	ND	5	10/08/92	283006

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	101	(70 - 121)
Toluene-d8	101	(81 - 117)
Bromofluorobenzene	96	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0154

INTRA-LAB BLANK REPORT

LAB #: A2I290029

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	SOLID	10/01-10/02/92	275055

NOTE:

ND (NONE DETECTED)



MATRIX SPIKE REPORT

QC BATCH: 275044
LAB #: A2I250018-050 S
MATRIX: SOLID

WO #: 92575
PREPARATION DATE: 9/30/92
DATE ANALYZED: 9/30/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	97	94	(59-153)	4	(0- 27)
Trichloroethene	91	88	(77-134)	4	(0- 16)
Chlorobenzene	104	102	(77-122)	2	(0- 20)
Toluene	105	105	(73-139)	0	(0- 21)
Benzene	100	99	(81-127)	1	(0- 19)



WADSWORTH/
Division of Ensco Incorporated

Laboratories

Corporate and Laboratory:

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North Canton, OH 44720

216-497-9396
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6 8

0157

ANALYTICAL REPORT

PROJECT NO. 0064-001

HOWE VALLEY

Presented to:

JIM KNAUSS

HATCHER SAYRE

WADSWORTH/ALERT LABORATORIES

Alesia M. Danford
Project Manager

Mark P. Nebiolo
Laboratory Manager

October 16, 1992

Laboratories:

Pittsford, PA
412-821-5477



PROJECT NARRATIVE

The following report contains analytical results for nine solid samples submitted to WADSWORTH/ALERT Laboratories by Hatcher Sayre, Inc., from the Howe Valley site, project number 0064-001. The samples were received October 5, 1992, according to documented sample acceptance procedures.

WADSWORTH/ALERT Laboratories utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the following page in accordance with the methods indicated. A summary of QC data for these analyses is included at the end of the report.



6 8 0159

ANALYTICAL METHODS SUMMARY

Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Volatile Organics, GC/MS
Solids, Total (TS)

Methods

SW846 8240
USEPA 160.3 MODIFIED

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.
- USEPA 600/4-79-02, "Methods for Chemical Analysis of Water and Wastes", March, 1983.



6 8 0160

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
94577	A2J050008-001	1388 NASP N 9-29-92 3:00
94579	A2J050008-002	1389 NASP S 9-29-92 3:00
94580	A2J050008-003	1392 SASP 1 10-2-92 7:00
94581	A2J050008-004	1393 SASP 2 10-2-92 7:00
94582	A2J050008-005	1394 SASP 3 10-2-92 7:00
94583	A2J050008-006	1395 SASP 4 10-2-92 7:00
94584	A2J050008-007	1396 SASP 5 10-2-92 7:00
94585	A2J050008-008	1397 SASP 6 10-2-92 7:00
94586	A2J050008-009	1398 SASP 7 10-2-92 7:00



6 8 0161

HATCHER SAYRE

1388 NASP N 9-29-92 3:00

WO #: 94577101
LAB #: A2J050008-001
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,2-Dichloroethene, Total	ND	8,900	SW846 8240	10/06-10/08/92	282027
1,1,1-Trichloroethane	36,000	8,900	SW846 8240	10/06-10/08/92	282027
1,1-Dichloroethane	ND	8,900	SW846 8240	10/06-10/08/92	282027
Tetrachloroethene	250,000	8,900	SW846 8240	10/06-10/08/92	282027

SURROGATE RECOVERY%ACCEPTABLE LIMITS

1,2-Dichloroethane-d4
Toluene-d8
Bromofluorobenzene

DIL (70 - 121)
DIL (81 - 117)
DIL (74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0162

HATCHER SAYRE

1388 NASP N 9-29-92 3:00

WO #: 94577

LAB #: A2J050008-001

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	84	0.5	%	USEPA 160.3	10/06-10/07/92	280021

NOTE: AS RECEIVED



6 8 0163

HATCHER SAYRE

1389 NASP S 9-29-92 3:00

WO #: 94579101

LAB #: A2J050008-002

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/08/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/08/92	282027
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/08/92	282027
Tetrachloroethene	1,700	620	SW846 8240	10/06-10/08/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	95	(70 - 121)
Toluene-d8	98	(81 - 117)
Bromofluorobenzene	96	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)



6 8 0164

HATCHER SAYRE

1389 NASP S 9-29-92 3:00

WO #: 94579
LAB #: A2J050008-002
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	85	0.5	%	USEPA 160.3	10/06-10/07/92	280021

NOTE: AS RECEIVED



6 8 0165

HATCHER SAYRE

1392 SASP 1 10-2-92 7:00

WO #: 94580101

LAB #: A2J050008-003

DATE RECEIVED: 10/05/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	640	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	105	(70 - 121)
Toluene-d8	98	(81 - 117)
Bromofluorobenzene	112	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0166

HATCHER SAYBE

1392 SASP 1 10-2-92 7:00

WO #: 94580
LAB #: A2J050008-003
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0167

HATCHER SAYRE

1393 SASP 2 10-2-92 7:00

WO #: 94581101

LAB #: A2J050008-004

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	ND	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	99	(70 - 121)
Toluene-d8	99	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0168

HATCHER SAYRE

1393 SASP 2 10-2-92 7:00

WO #: 94581
LAB #: A2J050008-004
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	91	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0169

HATCHER SAYRE

1394 SASP 3 10-2-92 7:00

WO #: 94582101

LAB #: A2J050008-005

DATE RECEIVED: 10/05/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	330 J	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	100	(70 - 121)
Toluene-d8	97	(81 - 117)
Bromofluorobenzene	119	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)
J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)



6 8 0170

HATCHER SAYRE

1394 SASP 3 10-2-92 7:00

WO #: 94582
LAB #: A2J050008-005
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	89	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0171

HATCHER SAYRE

1395 SASP 4 10-2-92 7:00

WO #: 94583101

LAB #: A2J050008-006

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	ND	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	100	(70 - 121)
Toluene-d8	99	(81 - 117)
Bromofluorobenzene	103	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)

6 8 0172

HATCHER SAYRE

1395 SASP 4 10-2-92 7:00

WO #: 94583
LAB #: A2J050008-006
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0173

HATCHER SAYRE

1396 SASP 5 10-2-92 7:00

WO #: 94584101

LAB #: A2J050008-007

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	330 J	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	90	(70 - 121)
Toluene-d8	93	(81 - 117)
Bromofluorobenzene	105	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)

6 8 0174

HATCHER SAYRE

1396 SASP 5 10-2-92 7:00

WO #: 94584

LAB #: A2J050008-007

DATE RECEIVED: 10/05/92

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0175

HATCHER SAYRE

1397 SASP 6 10-2-92 7:00

WO #: 94585101

LAB #: A2J050008-008

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/07/92	282027
Tetrachloroethene	ND	620	SW846 8240	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	93	(70 - 121)
Toluene-d8	96	(81 - 117)
Bromofluorobenzene	99	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0176

HATCHER SAYRE

1397 SASP 6 10-2-92 7:00

WO #: 94585
LAB #: A2J050008-008
MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	91	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0177

HATCHER SAYRE

1398 SASP 7 10-2-92 7:00

WO #: 94586101

LAB #: A2J050008-009

DATE RECEIVED: 10/05/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/06-10/08/92	282027
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/06-10/08/92	282027
Tetrachloroethene	600 J	620	SW846 8240	10/06-10/08/92	282027
1,1,1-Trichloroethane	ND	620	SW846 8240	10/06-10/08/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	108	(70 - 121)
Toluene-d8	104	(81 - 117)
Bromofluorobenzene	104	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)



6 8 0178

HATCHER SAYRE

1398 SASP 7 10-2-92 7:00

WO #: 94586

LAB #: A2J050008-009

MATRIX: SOLID

DATE RECEIVED: 10/05/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/06-10/07/92	280022

NOTE: AS RECEIVED



6 8 0179

QUALITY CONTROL SECTION



6 8 0100

QUALITY CONTROL NARRATIVE

The results included in the report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with the exception of those items noted.

The matrix spike and matrix spike duplicates (MS/MSDs) contained in this quality control report were generated as part of the laboratory QA/QC program requirements. These requirements include the analysis of a MS/MSD on a one in twenty basis. Therefore, the associated batch numbers indicated on the MS/MSD reports may not reflect the same batch numbers as those of the samples contained in the analytical report.

"DIL" in the analytical report means that due to high concentrations of analytes in the sample, a dilution was made and the surrogates or spiking compounds could not be quantitated.



6 8 0131

CHECK SAMPLE REPORT

QC BATCH: 282027
LAB #: A2J080000-027 C
MATRIX: SOLID

PREPARATION DATE: 10/06/92
DATE ANALYZED: 10/07/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	93	(56-139)
Trichloroethene	98	(79-128)
Chlorobenzene	110	(79-118)
Toluene	110	(78-122)
Benzene	113	(77-122)

6 8 0182

CHECK SAMPLE REPORT

LAB #: A2J050008

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Solids, Total (TS)	105	(89-110)	SOLID	10/06-10/07/92	280021
Solids, Total (TS)	106	(89-110)	SOLID	10/06-10/07/92	280022



6 8 0183

INTRA-LAB BLANK REPORT

LAB #: A2J080000-027

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	10/06-10/07/92	282027
1,2-Dichloroethene, Total	ND	620	10/06-10/07/92	282027
Tetrachloroethene	ND	620	10/06-10/07/92	282027
1,1,1-Trichloroethane	ND	620	10/06-10/07/92	282027

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	105	(70 - 121)
Toluene-d8	103	(81 - 117)
Bromofluorobenzene	85	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0164

INTRA-LAB BLANK REPORT

LAB #: A2J050008

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	SOLID	10/06-10/07/92	280021
Solids, Total (TS)	ND	0.5	%	SOLID	10/06-10/07/92	280022

NOTE:

NE (NONE DETECTED)



6 8 0185

MATRIX SPIKE REPORT

QC BATCH: 266039
LAB #: A2I210005-004 S
MATRIX: SOLID

WO #: 91022
PREPARATION DATE: 9/22/92
DATE ANALYZED: 9/23/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	219	212	(59-153)	3	(0- 27)
Trichloroethene	90	88	(77-134)	3	(0- 16)
Chlorobenzene	94	92	(77-122)	1	(0- 20)
Toluene	92	92	(73-139)	1	(0- 21)
Benzene	91	90	(81-127)	2	(0- 19)



HATCHER-SAYRE, INC.

CHAIN OF CUSTODY RECORD

PROJECT <u>Howe Valley</u>			PROJECT NO. <u>0064-001</u>		SAMPLER'S SIGNATURE <u>Paul M. Weaver</u>		PRINTED NAME <u>Paul M. Weaver</u>		HATCHER-SAYRE, INC. SAMPLE NO.		DATE		TIME		MATRIX		NUMBER OF CONTAINERS		SAMPLE TYPE (CHECK BOX)		ANALYSES REQUIRED		REMARKS OR SAMPLE LOCATION		PRESERVATION	
GRAB		COMPOSITE		1,1,1-Trichloroethane		1,2-Dichloroethane		Tetrachloroethane		1,1-Dichloroethane		ICED		SPECIFY CHEMICALS												
1388 MASP N		9/29/92		3:00		50.1		1		X		X		X		X		X		X		X		X		
1389 MASP S		9/29/92		3:00		50.1		1		X		X		X		X		X		X		X		X		
1392 MASP 1		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1393 MASP 2		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1394 MASP 3		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1395 MASP 4		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1396 MASP 5		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1397 MASP 6		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
1398 MASP 7		9/29/92		7:00		50.1		1		X		X		X		X		X		X		X		X		
Paul M. Weaver		9/29/92		17:50						Hatch M. Decker																
Hatch M. Decker		9/29/92		12:38						Hatch M. Decker																
RECEIVED BY (SIGNATURE):		DATE		TIME						RECEIVED TO (SIGNATURE):		DATE		TIME												
CONTRACT LAB		RECEIVED FOR LAB BY (SIGNATURE):		DATE		TIME				TURNAROUND REQUIRED		24 HOURS		48 HOURS		NORMAL		OTHER								



WADSWORTH/
Division of Ensco Incorporated

Laboratories

Corporate and Laboratory:

4101 Shure Drive NW
North Canton OH 44720

216-497-9391
FAX: 216-497-0770

6 3

0187

ANALYTICAL REPORT

PROJECT NO. 0064-001

HOWE-VALLEY

Presented to:

JIM KNAUSS

HATCHER SAYRE, INC.

WADSWORTH/ALERT LABORATORIES

Alesia M. Danford

Alesia M. Danford
Project Manager

Mark P. Nebiolo

Mark P. Nebiolo
Laboratory Manager

October 20, 1992

Laboratories:

Pittsburgh, PA
412-828-5477



6 8 -0188

PROJECT NARRATIVE

The following report contains the analytical results for eight water samples and one Quality Control sample submitted to WADSWORTH/ALERT Laboratories by Hatcher Sayre, Inc., from the Howe-Valley site, project number 0064-001. The samples were received October 9, 1992, according to documented sample acceptance procedures.

WADSWORTH/ALERT Laboratories utilizes only USEPA approved methods and instrumentation in all analytical work. The samples presented in this report were analyzed for the parameters listed on the following page in accordance with the methods indicated. A summary of QC data for these analyses is included at the end of the report.



6 8 0189

ANALYTICAL METHODS SUMMARY

Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Volatile Organics, GC/MS
Solids, Total (TS)

Methods

SW846 8240
USEPA 160.3 MODIFIED

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.
- USEPA 600/4-79-02, "Methods for Chemical Analysis of Water and Wastes", March, 1983.



6 8 0190

SAMPLE SUMMARY

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
95440	A2J090007-001	1403 SASP-3 10-7-92 8:30AM
95441	A2J090007-002	1404 SASP-3 (E) 10-7-92 8:30AM
95442	A2J090007-003	1405 NASP-2 NW 10-7-92 9:30AM
95443	A2J090007-004	1406 NASP-2 SW 10-7-92 9:30AM
95444	A2J090007-005	1407 NASP-2 NE 10-7-92 9:30AM
95445	A2J090007-006	1408 NASP-2 SE 10-7-92 9:30AM
95446	A2J090007-007	1409 NASP-3 (N) 10-7-92 6:00PM
95447	A2J090007-008	1410 NASP-3 (S) 10-7-92 6:00PM
95449	A2J090007-009	1414 TRIP BLANK 10-7-92



6 8 0191

HATCHER SAYRE, INC.

1403 SASP-3 10-7-92 8:30AM

WO #: 95440101

LAB #: A2J090007-001

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	6,200	SW846 8240	10/12-10/13/92	288015
1,2-Dichloroethene, Total	ND	6,200	SW846 8240	10/12-10/13/92	288015
Tetrachloroethene	71,000	6,200	SW846 8240	10/12-10/13/92	288015
1,1,1-Trichloroethane	ND	6,200	SW846 8240	10/12-10/13/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	116	(70 - 121)
Toluene-d8	104	(81 - 117)
Bromofluorobenzene	176*	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0192

HATCHER SAYRE

1403 SASP-3 10-7-92 8:30AM

WO #: 95440

LAB #: A2J090007-001

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	86	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0193

HATCHER SAYRE, INC.

1404 SASP-3 (E) 10-7-92 8:30AM

WO #: 95441101

LAB #: A2J090007-002

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/12/92	288015
Tetrachloroethene	11,000	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	620	SW846 8240	10/12/92	288015

SURROGATE RECOVERY%ACCEPTABLE LIMITS

1,2-Dichloroethane-d4
Toluene-d8
Bromofluorobenzene

111
99
121

(70 - 121)
(81 - 117)
(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0194

HATCHER SAYRE

1404 SASP-3 (E) 10-7-92 8:30AM

WO #: 95441

LAB #: A2J090007-002

MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	79	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0195

HATCHER SAYRE, INC.

1405 NASP-2 NW 10-7-92 9:30AM

WO #: 95442101

LAB #: A2J090007-003

MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/12/92	288015
Tetrachloroethene	ND	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	620	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	107	(70 - 121)
Toluene-d8	109	(81 - 117)
Bromofluorobenzene	109	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0196

HATCHER SAYRE

1405 NASP-2 NW 10-7-92 9:30AM

WO #: 95442
LAB #: A2J090007-003
MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	91	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0197

HATCHER SAYRE, INC.

1406 NASP-2 SW 10-7-92 9:30AM

WO #: 95443101

LAB #: A2J090007-004

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/12/92	288015
Tetrachloroethene	ND	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	620	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	113	(70 - 121)
Toluene-d8	107	(81 - 117)
Bromofluorobenzene	106	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0198

HATCHER SAYRE

1406 NASP-2 SW 10-7-92 9:30AM

WO #: 95443
LAB #: A2J090007-004
MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0199

HATCHER SAYRE, INC.

1407 NASP-2 NE 10-7-92 9:30AM

WO #: 95444101

LAB #: A2J090007-005

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/12/92	288015
Tetrachloroethene	ND	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	620	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	120	(70 - 121)
Toluene-d8	106	(81 - 117)
Bromofluorobenzene	107	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0000

HATCHER SAYRE

1407 NASP-2 NE 10-7-92 9:30AM

WO #: 95444

LAB #: A2J090007-005

MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	91	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0201

HATCHER SAYRE, INC.

1408 NASP-2 SE 10-7-92 9:30AM

WO #: 95445101

LAB #: A2J090007-006

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	620	SW846 8240	10/12/92	288015
Tetrachloroethene	ND	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	620	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	107	(70 - 121)
Toluene-d8	101	(81 - 117)
Bromofluorobenzene	102	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0202

HATCHER SAYRE

1408 NASP-2 SE 10-7-92 9:30AM

WO #: 95445
LAB #: A2J090007-006
MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	90	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0203

HATCHER SAYRE, INC.

1409 NASP-3 (N) 10-7-92 6:00PM

WO #: 95446101

LAB #: A2J090007-007

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	440 J	620	SW846 8240	10/12/92	288015
Tetrachloroethene	14,000	620	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	520 J	620	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	110	(70 - 121)
Toluene-d8	104	(81 - 117)
Bromofluorobenzene	142*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)



6 8 0204

HATCHER SAYRE

1409 NASP-3 (N) 10-7-92 6:00PM

WO #: 95446

LAB #: A2J090007-007

MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	83	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0205

HATCHER SAYRE, INC.

1410 NASP-3 (S) 10-7-92 6:00PM

WO #: 95447101

LAB #: A2J090007-008

DATE RECEIVED: 10/09/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	6,200	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	6,200	SW846 8240	10/12/92	288015
Tetrachloroethene	74,000	6,200	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	60,000	6,200	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	118	(70 - 121)
Toluene-d8	102	(81 - 117)
Bromofluorobenzene	150*	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0206

HATCHER SAYRE

1410 NASP-3 (S) 10-7-92 6:00PM

WO #: 95447

LAB #: A2J090007-C08

MATRIX: SOLID

DATE RECEIVED: 10/09/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	80	0.5	%	USEPA 160.3	10/12-10/13/92	286014

NOTE: AS RECEIVED



6 8 0207

HATCHER SAYRE, INC.

1414 TRIP BLANK 10-7-92

WO #: 95449101

LAB #: A2J090007-009

DATE RECEIVED: 10/09/92

MATRIX: WATER

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/L)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5.0	SW846 8240	10/12/92	288015
1,2-Dichloroethene, Total	ND	5.0	SW846 8240	10/12/92	288015
Tetrachloroethene	ND	5.0	SW846 8240	10/12/92	288015
1,1,1-Trichloroethane	ND	5.0	SW846 8240	10/12/92	288015

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	101	(76 - 114)
Toluene-d8	99	(88 - 110)
Bromofluorobenzene	102	(86 - 115)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0208

QUALITY CONTROL SECTION



QUALITY CONTROL NARRATIVE

The results included in the report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with the exception of those items noted.

The matrix spike and matrix spike duplicates (MS/MSDs) contained in this quality control report were generated as part of the laboratory QA/QC program requirements. These requirements include the analysis of a MS/MSD on a one in twenty basis. Therefore, the associated batch numbers indicated on the MS/MSD reports may not reflect the same batch numbers as those of the samples contained in the analytical report.

Check and Blank numbers 93012 and 93013 are associated with batch number 288015 in the analytical report requested for Volatile Organic Compounds analysis.



QUALITY ASSURANCE/QUALITY CONTROL
PROGRAM ELEMENTS

WADSWORTH/ALERT Laboratories conducts a quality assurance/quality control (QA/QC) program designed to provide scientifically valid and legally defensible data.

Quality control samples provide a mechanism for assessing the overall quality of the analytical process and can be used to indicate the useability of the analytical data. These QC samples include check samples, method blanks, matrix spikes and surrogate spikes.

The CHECK SAMPLE is used to demonstrate that all laboratory analytical processes were functioning properly when the associated sample batch was prepared and analyzed. The check sample is a simulated sample spiked with representative analytes prepared and analyzed with a batch of samples. Spike recovery values from this check sample must meet laboratory established acceptance criteria.

The METHOD BLANK is used to measure the level of any background contamination in the laboratories analytical system. The method blank is carried through the entire process, including the preparation, and consists of all of the reagents specific to the method.

All analytes of interest in the method blank for organic analyses must be below the method detection limits except for the following compounds:

Volatiles

Methylene chloride
2-Butanone
Acetone

Semivolatiles

Dimethyl phthalate
Diethyl phthalate
Di-n-butyl phthalate
Butyl benzyl phthalate
Bis (2-ethylhexyl) phthalate
Di-n-octyl phthalate

These commonly-detected laboratory contaminants may be present in the method blank at up to five times the method reporting limit.

For metals analyses, if any analyte concentration in the method blank is above the method reporting limit, then the lowest concentration of that analyte in the associates samples must be ten times the blank concentration. Otherwise, all samples associated with the blank which are less than ten times the blank are redigested and reanalyzed.

The laboratory performs MATRIX SPIKES (MS) and MATRIX SPIKE DUPLICATES (MSD) to indicate any matrix effects within a given sample. They also allow the laboratory to gather precision and bias data for a specific method and matrix.



Since matrix effects may bias percent recovery, the laboratory performs corrective action if the precision (RPD) criteria of the MS/MSD is not met.

SURROGATE SPIKES are used by the laboratory to indicate method bias introduced by the sample matrix during the preparation and analysis of a specific method. Surrogates are normally organic compounds similar to those being analyzed for the GC or GC/MS. If surrogate recoveries fail to meet laboratory acceptance criteria it does not necessarily indicate poor laboratory control but may in fact be attributed to a sample matrix effect. In the event that surrogates fail criteria, a reparation and reanalysis is performed to determine the presence of a matrix effect.

The laboratory uses the following surrogate recovery criteria for all organic analyses:

For the GC/MS Base/Neutral fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For the GC/MS Acid fraction the surrogate criteria requires that two of the three surrogates must meet recovery limits. The third surrogate must have a recovery of ten percent or greater.

For GC/ECD Pesticides, the surrogate criteria requires that one of the two surrogates must meet recovery limits.

For Volatiles, PCBs and Herbicides all surrogates utilized must meet surrogate recovery limits.



6 8 0212

CHECK SAMPLE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPIKE MATRIX	QC CONTROL LIMITS
GC/MS VOLATILE COMPOUNDS				
93012	Acetone	83	SOLID	(*)
	Benzene	92		(66-142)
	Bromodichloromethane	94		(*)
	Bromoform	105		(55-138)
	Bromomethane	78		(*)
	2-Butanone	86		(*)
	Carbon Disulfide	88		(*)
	Carbon Tetrachloride	97		(*)
	Chlorobenzene	98		(60-133)
	Chlorodibromomethane	97		(*)
	Chloroethane	76		(*)
	Chloroform	92		(*)
	Chloromethane	85		(50-140)
	1,1-Dichloroethane	91		(*)
	1,2-Dichloroethane	90		(*)
	1,1-Dichloroethene	86		(59-172)
	cis-1,2-Dichloroethene	92		(*)
	trans-1,2-Dichloroethene	96		(*)
	1,2-Dichloropropane	93		(*)
	cis-1,3-Dichloropropene	97		(*)
	trans-1,3-Dichloropropene	96		(*)
	Ethylbenzene	100		(69-123)
	2-Hexanone	89		(*)
	Methylene Chloride	92		(*)
	4-Methyl-2-Pentanone	92		(*)
	Styrene	100		(*)
	1,1,2,2-Tetrachloroethane	98		(45-145)
	Tetrachloroethene	100		(*)
	Toluene	95		(59-139)
	1,1,1-Trichloroethane	93		(*)
	1,1,2-Trichloroethane	96		(*)
	Trichloroethene	95		(62-137)
	Vinyl Chloride	84		(*)
	m-Xylene & p-Xylene	96		(71-123)
	o-Xylene	96		(71-123)

NOTE: (*) - Check Sample Recovery ranges unavailable.



6 8 0213

CHECK SAMPLE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPIKE MATRIX	QC CONTROL LIMITS
GC/MS VOLATILE COMPOUNDS				
93013	Acetone	102	SOLID	(*)
	Benzene	95		(66-142)
	Bromodichloromethane	98		(*)
	Bromoform	100		(55-138)
	Bromomethane	101		(*)
	2-Butanone	96		(*)
	Carbon Disulfide	96		(*)
	Carbon Tetrachloride	94		(*)
	Chlorobenzene	95		(60-133)
	Chlorodibromomethane	100		(*)
	Chloroethane	81		(*)
	Chloroform	98		(*)
	Chloromethane	120		(50-140)
	1,1-Dichloroethane	98		(*)
	1,2-Dichloroethane	97		(*)
	1,1-Dichloroethene	100		(59-172)
	cis-1,2-Dichloroethene	98		(*)
	trans-1,2-Dichloroethene	96		(*)
	1,2-Dichloropropane	97		(*)
	cis-1,3-Dichloropropene	99		(*)
	trans-1,3-Dichloropropene	99		(*)
	Ethylbenzene	98		(69-123)
	2-Hexanone	97		(*)
	Methylene Chloride	91		(*)
	4-Methyl-2-Pentanone	100		(*)
	Styrene	96		(*)
	1,1,2,2-Tetrachloroethane	96		(45-145)
	Tetrachloroethene	95		(*)
	Toluene	96		(59-139)
	1,1,1-Trichloroethane	90		(*)
	1,1,2-Trichloroethane	97		(*)
	Trichloroethene	98		(62-137)
	Vinyl Chloride	96		(*)
	m-Xylene & p-Xylene	95		(71-123)
	o-Xylene	96		(71-123)

NOTE: (*) - Check Sample Recovery ranges unavailable.



6 8 0214

CHECK SAMPLE REPORT

LAB #: A2J090007

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Solids, Total (TS)	99	(89-110)	SOLID	10/12-10/13/92	286014



6 8 0215

COMPANY: Wadsworth/Alert Laboratories
LAB #: 9192-91013
MATRIX: WATER

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 10/13/92

SAMPLE ID: INTRA-LAB BLANK, 10/13/92

VOLATILE ORGANIC COMPOUNDS BLANK REPORT
METHOD 8240 LIST - GC/MS

PARAMETER	RESULT (ug/l)	DETECTION LIMIT
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethene, Total	ND	5.0
Tetrachloroethene	ND	5.0
1,1,1-Trichloroethane	ND	5.0

NOTE: ND (None Detected)
J (Detected, but below quantitation limit; estimated value)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
1,2-Dichloroethane-d4	(76-114)	(70-121)	108
Toluene-d8	(88-110)	(81-117)	98
Bromofluorobenzene	(86-115)	(74-121)	96



6 8 0216

COMPANY: Wadsworth/Alert Laboratories
LAB #: 9392-93012
MATRIX: SOLID

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 10/12/92

SAMPLE ID: INTRA-LAB BLANK, 10/12/92

VOLATILE ORGANIC COMPOUNDS BLANK REPORT
METHOD 8240 - GC/MS

PARAMETER	RESULT (ug/kg)	DETECTION LIMIT
1,1-Dichloroethane	ND	620
1,2-Dichloroethene, Total	ND	620
Tetrachloroethene	ND	620
1,1,1-Trichloroethane	ND	620

NOTE: ND (None Detected)
J (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
1,2-Dichloroethane-d4	(70-114)	(70-121)	110
Toluene-d8	(88-110)	(81-117)	103
Bromofluorobenzene	(86-115)	(74-121)	103



6 8 0217

COMPANY: Wadsworth/Alert Laboratories
LAB #: 9392-93013
MATRIX: SOLID

DATE RECEIVED: NA
DATE EXTRACTED: NA
DATE ANALYZED: 10/13/92

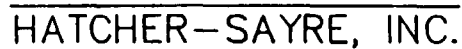
SAMPLE ID: INTRA-LAB BLANK, 10/13/92

VOLATILE ORGANIC COMPOUNDS BLANK REPORT
METHOD 8240 - GC/MS

PARAMETER	RESULT (ug/kg)	DETECTION LIMIT
1,1-Dichloroethane	ND	5.0
1,2-Dichloroethene, Total	ND	5.0
Tetrachloroethene	ND	5.0
1,1,1-Trichloroethane	ND	5.0

NOTE: ND (None Detected)
J (Detected, but below quantitation limit; estimated value)
B (Compound detected in method blank associated with this sample)
-- (Not Analyzed)

SURROGATE RECOVERY:	ACCEPTABLE LIMITS		%
	WATER	SOLID	
1,2-Dichloroethane-d4	(76-114)	(70-121)	108
Toluene-d8	(88-110)	(81-117)	98
Bromofluorobenzene	(86-115)	(74-121)	96



PROJECT						NUMBER OF CONTAINERS		SAMPLE TYPE (CHECK BOX)	ANALYSES REQUIRED								PRESERVATION		
PROJECT NO.									<div style="text-align: center;"> <div><i>1,1 Trichloroethane</i></div> <div><i>1,2 Dichloroethene</i></div> <div><i>Tetrachloroethene</i></div> <div><i>1,1 Dichloroethane</i></div> </div>								ICED	SPECIFY CHEMICALS	
HATCHER-SAYRE, INC. SAMPLE NO.								GRAB											COMPOSITE
PRINTED NAME									REMARKS OR SAMPLE LOCATION										
DATE																			
TIME																			
MATRIX																			
1403	NASP-3	10/7/92	8:30am	Soil	1	X		X	X	X	X	X	X	X	X	> added per J. Knowles 10/9/92	X		
1404	NASP-3 (B)	10/7/92	8:30am	Soil	1	X		X	X	X	X	X	X	X	X		X		
1405	NASP-2 NW	10/7/92	9:39am	Soil	1	X		X	X	X	X	X	X	X	X		X		
1406	NASP-2 SW	10/7/92	9:30am	Soil	1	X		X	X	X	X	X	X	X	X		X		
1407	NASP-2 NE	10/7/92	9:30am	Soil	1	X		X	X	X	X	X	X	X	X		X		
1408	NASP-2 SE	10/7/92	9:30am	Soil	1	X		X	X	X	X	X	X	X	X		X		
1409	NASP-3(N)	10/7/92	6:00pm	Soil	1	X		X	X	X	X	X	X	X	X	> added per J. Knowles 10/9/92	X		
1410	NASP-3(S)	10/7/92	6:00pm	Soil	1	X		X	X	X	X	X	X	X	X		X		
1414	Trip Blank	10/7/92		H ₂ O	1	X		X	X	X	X	X	X	X	X		X		
RELINQUISHED BY (SIGNATURE): Kevin M. Durkin						DATE	10/9/92	TIME	1:15	RELINQUISHED TO (SIGNATURE): JSW									
RELINQUISHED BY (SIGNATURE):						DATE:		TIME:		RELINQUISHED TO (SIGNATURE):								SHIPPING COMPANY:	
RELINQUISHED BY (SIGNATURE):						DATE:		TIME:		RELINQUISHED TO (SIGNATURE):								SHIPPING TICKET NO.: 021	
CONTRACT LAB RECEIVED FOR ANALYSIS BY (SIGNATURE): Kelly Atkins						DATE:	10/9/92	TIME:	9:20	TURNAROUND REQUIRED								<input checked="" type="checkbox"/> 24 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input type="checkbox"/> OTHER	
REMARKS: <div>A.Dur 10/14/92 PER Tom T. Am</div>																			



6 8 0219

MATRIX SPIKE DATA

LAB ID	PARAMETER	SPIKE PERCENT RECOVERY	SPK/DUP PERCENT RECOVERY	SPIKE MATRIX	QC CONTROL LIMITS
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GC/MS VOLATILE COMPOUNDS

64061	1,1-Dichloroethene	120	111	SOLID	(59-172)
	Trichloroethene	98	106		(62-137)
	Benzene	102	108		(60-133)
	Toluene	99	104		(59-139)
	Chlorobenzene	102	111		(66-142)



6 8 0220

INTRA-LAB BLANK REPORT

LAB #: A2J090007

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	SOLID	10/12-10/13/92	286014

NOTE:

ND (NONE DETECTED)



WADSWORTH/ALERT Laboratories

Division of Ensco Incorporated

Corporate and Laboratory:

4101 Shuffel Drive, NW
North Canton, OH 44720

216-497-9396
FAX 216-497-0772

6 8

0221

ANALYTICAL REPORT

PROJECT NO. 0064-001

HOWE-VALLEY

Presented to:

Paul Weaver

HATCHER SAYRE, INC.

WADSWORTH/ALERT LABORATORIES

Alesia M. Danford

Alesia M. Danford
Project Manager

Mark P. Nebiolo

Mark P. Nebiolo
Laboratory Manager

November 4, 1992

Laboratories:

Pittsburgh, PA
412-826-5477

Tampa, FL
813-921-1750



ANALYTICAL METHODS SUMMARY

Wadsworth/ALERT Laboratories utilizes only USEPA approved methods in analytical work. The methods used for the analyses presented in the following report are listed below.

Parameters

Volatile Organics, GC/MS
Solids, Total (TS)

Methods

SW846 8240
USEPA 160.3 MODIFIED

References:

- SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, September, 1986.
- USEPA 600/4-79-02, "Methods for Chemical Analysis of Water and Wastes", March, 1983.

**SAMPLE SUMMARY**

The analytical results of the samples listed below are presented on the following pages.

<u>WO #</u>	<u>LABORATORY ID</u>	<u>SAMPLE IDENTIFICATION</u>
98794	A2J270006-001	1424SASP(3A) 10-23-92 2:15
98795	A2J270006-002	1425SASP(3B) 10-23-92 2:15
98796	A2J270006-003	1426SASP(3C) 10-23-92 2:15
98797	A2J270006-004	1428NASP#4(N) 10-23-92 2:40
98798	A2J270006-005	1429NASP#4(S) 10-23-92 2:40
98799	A2J270006-006	1430NASP#3A(NE) 10-26-92 4:30
98800	A2J270006-007	1431NASP#3A(NW) 10-26-92 4:30
98801	A2J270006-008	1432NASP#3A(SE) 10-26-92 4:30
98803	A2J270006-009	1433NASP#3A(SW) 10-26-92 4:30



6 8 0224

HATCHER SAYRE, INC.

1424SASP(3A) 10-23-92 2:15

WO #: 98794101

LAB #: A2J270006-001

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	12	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	12	SW846 8240	10/28/92	303046
Tetrachloroethene	44	12	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	12	SW846 8240	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	97	(70 - 121)
Toluene-d8	110	(81 - 117)
Bromofluorobenzene	231*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



6 8 0225

HATCHER SAYRE, INC.

1424SASP(3A) 10-23-92 2:15

WO #: 98794
LAB #: A2J270006-001
MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	94	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0226

HATCHER SAYRE, INC.

1425SASP(3B) 10-23-92 2:15

WO #: 98795101

LAB #: A2J270006-002

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	7	SW846 8240	10/29/92	303057
1,2-Dichloroethene, Total	ND	7	SW846 8240	10/29/92	303057
Tetrachloroethene	18	7	SW846 8240	10/29/92	303057
1,1,1-Trichloroethane	ND	7	SW846 8240	10/29/92	303057

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	99	(70 - 121)
Toluene-d8	122*	(81 - 117)
Bromofluorobenzene	209*	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



6 8 0227

HATCHER SAYRE, INC.

1425SASP(3B) 10-23-92 2:15

WO #: 98795

LAB #: A2J270006-002

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	93	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0228

HATCHER SAYRE, INC.

1426SASP(3C) 10-23-92 2:15

WO #: 98796101

LAB #: A2J270006-003

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	5	SW846 8240	10/28/92	303046
Tetrachloroethene	16	5	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	5	SW846 8240	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	92	(70 - 121)
Toluene-d8	115	(81 - 117)
Bromofluorobenzene	146*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



6 8 0229

HATCHER SAYRE, INC.

1426SASP(3C) 10-23-92 2:15

WO #: 98796

LAB #: A2J270006-003

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	93	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0230

HATCHER SAYRE, INC.

1428NASP#4(N) 10-23-92 2:40

WO #: 98797101

LAB #: A2J270006-004

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	16,000	SW846 8240	10/28-10/30/92	307037
1,2-Dichloroethene, Total	ND	16,000	SW846 8240	10/28-10/30/92	307037
Tetrachloroethene	240,000	16,000	SW846 8240	10/28-10/30/92	307037
1,1,1-Trichloroethane	ND	16,000	SW846 8240	10/28-10/30/92	307037

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	DIL	(70 - 121)
Toluene-d8	DIL	(81 - 117)
Bromofluorobenzene	DIL	(74 - 121)

NOTE: AS RECEIVED
ND (NONE DETECTED)



6 8 0231

HATCHER SAYRE, INC.

1428NASP#4(N) 10-23-92 2:40

WO #: 98797

LAB #: A2J270006-004

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	79	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0232

HATCHER SAYRE, INC.

1429NASP#4(S) 10-23-92 2:40

WO #: 98798

LAB #: A2J270006-005

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	81	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0233

HATCHER SAYRE, INC.

143ONASP#3A(NE) 10-26-92 4:30

WO #: 98799101

LAB #: A2J270006-006

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	25	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	25	SW846 8240	10/28/92	303046
Tetrachloroethene	32	25	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	25	SW846 8240	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	107	(70 - 121)
Toluene-d8	159*	(81 - 117)
Bromofluorobenzene	187*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



6 8 0234

HATCHER SAYRE, INC.

1430NASP#3A(NE) 10-26-92 4:30

WO #: 98799

LAB #: A2J270006-006

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	94	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0235

HATCHER SAYRE, INC.

1431NASP#3A(NW) 10-26-92 4:30

WO #: 98800101

LAB #: A2J270006-007

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	12	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	12	SW846 8240	10/28/92	303046
Tetrachloroethene	19	12	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	12	SW846 8240	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	104	(70 - 121)
Toluene-d8	130*	(81 - 117)
Bromofluorobenzene	218*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.



6 8 0236

HATCHER SAYRE, INC.

1431NASP#3A(NW) 10-26-92 4:30

WO #: 98800

LAB #: A2J270006-007

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	93	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0237

HATCHER SAYRE, INC.

1432NASP#3A(SE) 10-26-92 4:30

WO #: 98801101

LAB #: A2J270006-008

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	50	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	50	SW846 8240	10/28/92	303046
Tetrachloroethene	38 J	50	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	50	SW846 8240	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	95	(70 - 121)
Toluene-d8	135*	(81 - 117)
Bromofluorobenzene	184*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.

J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)



6 8 0238

HATCHER SAYRE, INC.

1432NASP#3A(SE) 10-26-92 4:30

WO #: 98801

LAB #: A2J270006-008

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	95	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0239

HATCHER SAYRE, INC.

1433NASP#3A(SW) 10-26-92 4:30

WO #: 98803101

LAB #: A2J270006-009

DATE RECEIVED: 10/27/92

MATRIX: SOLID

----- REQUESTED PARAMETERS -----

<u>PARAMETER</u>	<u>RESULT</u> (ug/kg)	<u>REPORTING</u> <u>LIMIT</u>	<u>METHOD</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	50	SW846 8240	10/28/92	303046
1,2-Dichloroethene, Total	ND	50	SW846 8240	10/28/92	303046
Tetrachloroethene	46 J	50	SW846 8240	10/28/92	303046
1,1,1-Trichloroethane	ND	50	SW846 8240	10/28/92	303046

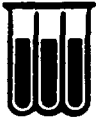
<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	97	(70 - 121)
Toluene-d8	159*	(81 - 117)
Bromofluorobenzene	182*	(74 - 121)

NOTE: AS RECEIVED

ND (NONE DETECTED)

* SURROGATE(S) OUTSIDE ACCEPTANCE CRITERIA DUE TO DEMONSTRATED MATRIX EFFECT.

J (DETECTED, BUT BELOW QUANTITATION LIMIT; ESTIMATED VALUE)



6 8 0240

HATCHER SAYRE, INC.

1433NASP#3A(SW) 10-26-92 4:30

WO #: 98803

LAB #: A2J270006-009

MATRIX: SOLID

DATE RECEIVED: 10/27/92

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNIT</u>	<u>METHOD</u>	<u>PREPARATION -</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
Solids, Total (TS)	97	0.5	%	USEPA 160.3	10/28-10/29/92	303004

NOTE: AS RECEIVED



6 8 0241

QUALITY CONTROL SECTION



6 8 0242

QUALITY CONTROL NARRATIVE

The results included in this report have been reviewed for compliance with the laboratory QA/QC plan. All data have been found to be compliant with laboratory protocol.

Sample A2J270006-001, 002, 006, 007, 008 and 009 requested for Volatile Organic analysis has elevated detection limits due to Tics.

"DIL" in the analytical report means that due to high concentrations of analytes in the sample, a dilution was made and the surrogates or spiking compounds could not be quantitated.



6 8 0243

CHECK SAMPLE REPORT

QC BATCH: 303046
LAB #: A2J290000-046 C
MATRIX: SOLID

PREPARATION DATE: 10/28/92
DATE ANALYZED: 10/28/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	113	(56-139)
Trichloroethene	100	(79-128)
Chlorobenzene	96	(79-118)
Toluene	96	(78-122)
Benzene	108	(77-122)



6 8 0244

CHECK SAMPLE REPORT

QC BATCH: 303057
LAB #: A2J290000-057 C
MATRIX: SOLID

PREPARATION DATE: 10/29/92
DATE ANALYZED: 10/29/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	107	(56-139)
Trichloroethene	91	(79-128)
Chlorobenzene	90	(79-118)
Toluene	87	(78-122)
Benzene	91	(77-122)



6 8 0245

CHECK SAMPLE REPORT

QC BATCH: 307037

LAB #: A2K020000-037 C

MATRIX: SOLID

PREPARATION DATE: 10/28/92

DATE ANALYZED: 10/30/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	133	(56-139)
Trichloroethene	105	(79-128)
Chlorobenzene	103	(79-118)
Toluene	114	(78-122)
Benzene	107	(77-122)



6 8 0246

CHECK SAMPLE REPORT

QC BATCH: 307038
LAB #: A2K020000-038 C
MATRIX: SOLID

PREPARATION DATE: 10/30/92
DATE ANALYZED: 11/02/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	Q/C LIMITS
1,1-Dichloroethene	110	(56-139)
Trichloroethene	97	(79-128)
Chlorobenzene	98	(79-118)
Toluene	99	(78-122)
Benzene	97	(77-122)



6 8 0247

CHECK SAMPLE REPORT

LAB #: A2J270006

----- INORGANIC ANALYTICAL REPORT -----

<u>COMPOUND</u>	<u>SPIKE PERCENT RECOVERY</u>	<u>LIMITS</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>Q/C BATCH</u>
Solids, Total (TS)	100	(89-110)	SOLID	10/28-10/29/92	303004



6 8 0248

INTRA-LAB BLANK REPORT

LAB #: A2J290000-046

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	10/28/92	303046
1,2-Dichloroethene, Total	ND	5	10/28/92	303046
Tetrachloroethene	ND	5	10/28/92	303046
1,1,1-Trichloroethane	ND	5	10/28/92	303046

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	109	(70 - 121)
Toluene-d8	100	(81 - 117)
Bromofluorobenzene	100	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0249

INTRA-LAB BLANK REPORT

LAB #: A2J290000-057

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	5	10/29/92	303057
1,2-Dichloroethene, Total	ND	5	10/29/92	303057
Tetrachloroethene	ND	5	10/29/92	303057
1,1,1-Trichloroethane	ND	5	10/29/92	303057

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	89	(70 - 121)
Toluene-d8	96	(81 - 117)
Bromofluorobenzene	80	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0250

INTRA-LAB BLANK REPORT

LAB #: A2K020000-037

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	10/28-10/30/92	307037
1,2-Dichloroethene, Total	ND	620	10/28-10/30/92	307037
Tetrachloroethene	ND	620	10/28-10/30/92	307037
1,1,1-Trichloroethane	ND	620	10/28-10/30/92	307037

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	104	(70 - 121)
Toluene-d8	103	(81 - 117)
Bromofluorobenzene	103	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0251

INTRA-LAB BLANK REPORT

LAB #: A2K020000-038

MATRIX: SOLID

----- VOLATILE ORGANICS, GC/MS -----

<u>PARAMETER</u>	<u>RESULT</u> <u>(ug/kg)</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>EXTRACTION-</u> <u>ANALYSIS DATE</u>	<u>QC</u> <u>BATCH</u>
1,1-Dichloroethane	ND	620	10/30/92	307038
1,2-Dichloroethene, Total	ND	620	10/30/92	307038
Tetrachloroethene	ND	620	10/30/92	307038
1,1,1-Trichloroethane	ND	620	10/30/92	307038

<u>SURROGATE RECOVERY</u>	<u>%</u>	<u>ACCEPTABLE LIMITS</u>
1,2-Dichloroethane-d4	116	(70 - 121)
Toluene-d8	112	(81 - 117)
Bromofluorobenzene	116	(74 - 121)

NOTE:

ND (NONE DETECTED)



6 8 0252

INTRA-LAB BLANK REPORT

LAB #: A2J270006

----- INORGANIC ANALYTICAL REPORT -----

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNIT</u>	<u>MATRIX</u>	<u>PREPARATION - ANALYSIS DATE</u>	<u>QC BATCH</u>
Solids, Total (TS)	ND	0.5	%	SOLID	10/28-10/29/92	303004

NOTE:

ND (NONE DETECTED)



6 8 0253

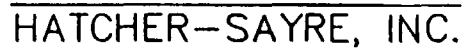
MATRIX SPIKE REPORT

QC BATCH: 303046
LAB #: A2J270006-003 S
MATRIX: SOLID

WO #: 98796
PREPARATION DATE: 10/28/92
DATE ANALYZED: 10/28/92

----- Volatile Organics, GC/MS -----

COMPOUND	SPIKE PERCENT RECOVERY	SPIKE/DUP PERCENT RECOVERY	Q/C LIMITS	RPD	RPD LIMITS
1,1-Dichloroethene	90	109	(59-153)	19	(0- 27)
Trichloroethene	91	86	(77-134)	6	(0- 16)
Chlorobenzene	86	89	(77-122)	3	(0- 20)
Toluene	106	114	(73-139)	8	(0- 21)
Benzene	78	91	(81-127)	15	(0- 19)



PROJECT <u>Howe - Valley</u>				NUMBER OF CONTAINERS	SAMPLE TYPE (CHECK BOX)		ANALYSES REQUIRED												PRESERVATION		
PROJECT NO. <u>0064-001</u>					GRAB	COMPOSITE	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">1,1 Trichloroethene</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">Tetrachloroethene</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">1,2 Dichloroethene</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">1,1 Dichloroethene</div> </div>												ICED	SPECIFY CHEMICALS	
SAMPLER'S SIGNATURE <u>Kevin M. Dunham</u>																					
PRINTED NAME <u>Kevin M. Dunham</u>				REMARKS OR SAMPLE LOCATION																	
HATCHER-SAYRE, INC. SAMPLE NO.	DATE	TIME	MATRIX																		
1424 SASP(3a)	10/24	2:15	Soil	1	✓		X	X	X	X										✓	
1425 SASP(3b)	10/24/12	2:15	Soil	1	✓		X	X	X	X										✓	
1426 SASP(3c)	10/23/12	2:15	Soil	1	✓		X	X	X	X										✓	
1428 NASP(4(N))	10/24/12	2:40	Soil	1	✓		X	X	X	X										✓	
1429 NASP(4(S))	10/23/12	2:40	Soil	1	✓		X	X	X	X										✓	
1430 NASP(4(NE))	10/26/12	4:30	Soil	1	✓		X	X	X	X										✓	
1431 NASP(4(3a))	10/26/12	4:30	Soil	1	✓		X	X	X	X										✓	
1432 NASP(4(3a))	10/24/12	4:30	Soil	1	✓		X	X	X	X										✓	
1433 NASP(4(3a))	10/24/12	4:30	Soil	1	✓		X	X	X	X										✓	
RELINQUISHED BY (SIGNATURE): <u>Kevin M. Dunham</u>				DATE: <u>10/23/12</u>	TIME:	RELINQUISHED TO (SIGNATURE): <u>[Signature]</u>	REMARKS: <u>Fed Ex</u>												SHIPPING TICKET NO. <u>1069640014</u>		
RELINQUISHED BY (SIGNATURE):				DATE: <u>10/23/12</u>	TIME:	RELINQUISHED TO (SIGNATURE):															
RELINQUISHED BY (SIGNATURE):				DATE:	TIME:	RELINQUISHED TO (SIGNATURE):															
CONTRACT LAB				RECEIVED FOR LAB BY (SIGNATURE): <u>[Signature]</u>		DATE: <u>10/27/12</u>	TIME: <u>9:40</u>	TURNAROUND REQUIRED <input checked="" type="checkbox"/> 24 HOURS <input type="checkbox"/> 48 HOURS <input type="checkbox"/> NORMAL <input type="checkbox"/> OTHER													

ATTACHMENT 3

6 8 0255

6 8 0256

ATTACHMENT 3
WEATHER INFORMATION



HATCHER-SAYRE, INC.

6 8 0257

HOME VALLEY LANDFILL
WEATHER CONDITIONS

DATE	MORNING TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (A.M.)	AFTERNOON TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (P.M.)	EVENING TEMP	CONDITION	PRECIP (INCHES)
9/2					74		0.2	77			
9/3	66	rain	0.06	66	79		0.0	88			
9/4					79		0.03	82			
9/5			} 0.54								
9/6											
9/7											
9/8	72		0.4	73	83		0	108	86		soil temp 100
9/9											
9/10	66		0.08	65							
9/11	50		0	50				85			
9/12											
9/13											
9/14	57	clear	0	57							
9/15	54	clear	0	54							



HATCHER-SAYRE, INC.

6 8 0258

HOWE VALLEY LANDFILL
WEATHER CONDITIONS

DATE	MORNING TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (A.M.)	AFTERNOON TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (P.M.)	EVENING TEMP	CONDITION	PRECIP (INCHES)
9/16	61	cloudy	0	61							
9/17	62	clear	0	62							
9/18	68	cloudy	0.19								
9/19	54	cloudy	0								
9/20			0.32								
9/21	72	cloudy	0								
9/22	70	cloudy	0.91				0.09				
9/23	42	clear	0.10								
9/24	43	clear	0								
9/25	59	cloudy	0								
9/26	66	cloudy	0			rain					
9/27			0.37								
9/28	48	clear									
9/29	41	clear	0								

9/30 32 clear 0

HOWE VALLEY LANDFILL
WEATHER CONDITIONS

DATE	MORNING TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (A.M.)	AFTERNOON TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (P.M.)	EVENING TEMP	CONDITION	PRECIP (INCHES)
10/1	36	clear	0.0								
10/2	37	clear	0.0								
10/3	41	clear	0.0								
10/4											
10/5	48		0.0								
10/6	32	clear	0.0								
10/7	38		0.0								
10/8	57	light rain	0.04						54	rain	1.02
10/9	40	cloudy	0.20								
10/10	42	pt. cloudy	0.0								
10/11											
10/12	42	clear	0.0								
10/13	33	pt. cloudy	0.0								
10/14	57		0.0								



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[illegible]

HATCHER-SAYRE, INC.



6 8 0261

HOME VALLEY LANDFILL
WEATHER CONDITIONS

DATE	MORNING	TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (A.M.)	AFTERNOON	TEMP	CONDITION	PRECIP (INCHES)	SOIL TEMP (P.M.)	EVENING	TEMP	CONDITION	PRECIP (INCHES)
10/26/92	30° air	27° ground	Clear	0.0		72°	Clear	clearly cloudy	0.0	65°	62°	Clear	light rain	0.0
10/27/92	50° air	42° ground	Calms over cast	0.2		79°	Sunny clear	wind & dry	0.0	67°	56°	Calms	cloudy	0.0
10/28/92	30° air	36° ground	Clear	0.0		75°	Sunny clear	wind & dry	0.0	70°	69°	Clear	clear	0.0
10/29/92	32° air	37° ground	Pt. cloudy	0.0		70°	Heavy	mostly cloudy	0.0	57°	61°	cloudy	cloudy	0.0
10/30/92	50° air	40° ground	Cloudy	0.0		51°	light rain	rain	0.4	49°	42°	cloudy	cloudy	0.0
11/2/92	60° air	49° ground	Rain	1.07"		61°	cloudy	wind & dry	0.0	58°	45°	mostly cloudy	light wind	0.0
11/3/92	34° air	39° ground	Clear	0.0		68°	Sunny	partly cloudy	0.0	65°	32°	cloudy	calms	0.24
11/4/92	40° air	42° ground	Cloudy	.24"		46°	cloudy	cloudy	0.0	49°	30°	cloudy	light wind	0.0
11/5/92	34° air	39° ground	Cloudy	0.0		37°	cloudy	light wind	0.0	58°	32°	cloudy	calms	0.0
11/6/92	36° air	40° ground	mostly cloudy	0.0		42°	cloudy	cloudy	0.0	47°	37°	cloudy	light wind	0.0
11/9/92	42° air	35° ground	Cloudy	0.0		55°	cloudy	cloudy	0.0	52°	32°	cloudy	calms	0.0
11/10/92	48° air	41° ground	Cloudy	0.0		56°	rain	rain	.52"	52°	45°	cloudy	light wind	0.0
11/16/92	29° air	35° ground	Clear	1.46"		50°	Pt. cloudy	Pt. cloudy	0.0	46°	37°	mostly cloudy	cloudy	0.0
11/17/92	47° air	41° ground	mostly cloudy	0.0		59°	mostly cloudy	from SW	0.0	57°	46°	Pt. cloudy	Pt. cloudy	0.0

